

**Land at Netley Firs, Kanes Hill
Southampton**

Hi-Acre Construction Ltd

Foul and Surface Water Drainage Technical Note

TSH/TN/0529/7230
19th June 2025

MJA Consulting have been appointed by Hi-Acre Construction to progress the Reserved Matters & Detailed Design for the development of land at Netley Firs, Kanes Hill, Southampton specifically the foul and surface water drainage strategies. The site currently benefits from outline planning permission for 23 employment units with associated car parking and access from Kanes Hill. Granted by Eastleigh Borough Council in March 2021. Application Reference: 0/18/82750.

Condition 23 of the above-mentioned planning approval states.

Condition 23

Construction of the development shall not commence until details of the proposed means of foul water sewerage disposal for the site have been submitted to and approved in writing by the Local Planning Authority. The development shall thereafter be carried out in accordance with the approved details, and shall be so maintained for the duration of the occupation of the development. Occupation of the development shall be phased to align with the delivery of any necessary sewerage infrastructure, to prevent an increased risk of flooding.

Condition 24 of the above-mentioned planning approval states.

Condition 24

No above ground development shall begin until a surface water drainage scheme for the site, based on sustainable drainage principles, has been submitted to and approved in writing by the Local Planning Authority. The scheme shall subsequently be implemented in accordance with the approved details before development is completed.

The scheme shall be based upon the principles within the following documents:

- 020.5288.001 "Site Layout: Drainage Strategy Sheet 1 of 2"
- 020.5288.002 "Site Layout: Drainage Strategy Sheet 2 of 2"
- 020.5288.003 rev B "Drainage Details"
- 020.5288.004 "Existing Flow Paths"
- 020.5288.005 rev A "Drainage Design Catchment Areas"
- Trail Pit Soakage Test Results rec/d 10.12.18



- *Micro Drainage results dated 16.11.18*
- *Paul Basham Associates Drainage Strategy Technical Note 020.5288/TN/1, August 2018*
- *Paul Basham Associates Drainage Strategy Technical Note 020.5288/TN/2, December 2018 and shall also include:*
 - *Further infiltration testing at formation level of the proposed permeable paving areas;*
 - *Full results of the proposed drainage system modelling for the 1:100 year events plus climate change, inclusive of all collection, conveyance, storage, flow control and disposal elements and including an allowance for urban creep;*
 - *Detailed drawings of the entire proposed surface water drainage system, including levels, gradients, dimensions and pipe and manhole reference numbers and catchment plans;*
 - *Full details of the proposed Suds features and any flow control measures;*
 - *Details of overland flood flow routes in the event of system exceedance, with demonstration that such flows can be appropriately managed on site without increasing flood risk to occupants and third party land;*
 - *Details of the measures taken to prevent pollution of the receiving groundwater in accordance with the water quality criteria set out in the Ciria SuDS Manual, and*
 - *Details for the long-term maintenance arrangements for the surface water drainage system (including all SuDS features).*

The submitted details shall identify runoff sub-catchments, SuDS components, control structures, flow routes and outfalls. In addition, the plan shall clarify the access that is required to each surface water management component for maintenance purposes. The maintenance plan shall be carried out in full thereafter.

This Technical Note has been produced to provide the information requested by the Conditions listed above and ultimately enable Eastleigh Borough Council (EBC) to discharge planning Condition 23 and 24.

Appendix A of this report contains the proposed foul water drainage strategy for the development. The proposals allow for a gravity connection into an existing Southern Water chamber located in Kanes Hill, approximately 225m north of the proposed site access. Sufficient details are provided on the drawing, as per the wording of the Condition, and therefore EBC should be able to discharge Condition 23.

MJA have produced a design for the foul and surface water drainage strategy for the development and can confirm it has been undertaken in accordance with the approved documents submitted as part of the outline application.

Appendix B of this technical note contains information relating to infiltration testing undertaken by Wilson Bailey Geotechnical & Environmental. The results have been summarised below in Table 1. For design purposes an average infiltration rate of 0.05904 m/hr has been used in the design.

Table 1: Summary of Infiltration Rates

Trial Pit Reference	Depth (m bgl)	Soil Type	Infiltration Rate (m/s)	Infiltration Rate (m/hr)
TP1	2.5	Gravel from 2m to 2.5m bgl	9.8×10^{-6}	0.03528
TP3	2.5	Gravel from 0.6m to 2.5m bgl	3.0×10^{-5}	0.108
TP5	2.3	Gravel from 0.45m to 2.5m bgl	9.4×10^{-6}	0.03384
TP7	2.8	Clay from 2.4m to 2.8m bgl*	2.1×10^{-6} *	0.00756*
Average Infiltration Rate			1.64×10^{-5}	0.05904

*TP7 test was undertaken in the clay layer and has therefore not been included in the calculation of establishing the average infiltration rate.

A proposed Surface Water Drainage Strategy has been produced based on the infiltration rates obtained from the site investigation. The proposed surface water strategy consists of permeable paving for the roads and parking areas of the development. All surface water runoff will flow through the sub-base of the permeable paving before being routed towards the outfall features. Runoff will be collected from the permeable paving sub-base by diffuser units and piped to a silt trap before discharging into underground geocellular storage tanks. These tanks will incorporate permeable geotextiles that will allow water to pass through the base of the tank and into the gravel strata that allows infiltration.

Appendix C of this report includes the following:

- proposed levels design, showing road contours and finished floor levels of units.
- proposed surface water drainage strategy, showing details of the permeable paving and outfall features.
- a catchment plan, showing where runoff will flow towards based on the proposed levels design
- an exceedance flow plan, showing where runoff will flow to in the event of a blockage, a storm event exceeding the design parameter or any failure of the system.

The average infiltration rate shown in Table 1 above has been used to calculate storage and suitable outfall features to enable discharge into the existing ground via infiltration. **Appendix D** of this technical note includes simulation calculations for the 100year + 40% climate change storm event for all outfall features shown in **Appendix C**.

Referring to Table 26.2 of the SuDS Manual – ‘Pollution hazard indices for different land use classifications’ the proposed development and land use results in a medium pollution hazard (commercial yard and delivery areas, therefore a ‘Simple Index’ method can be used to make a qualitative assessment of the proposed SuDS management.

Pollution hazard indices (Table 26.2 of SuDS Manual):

Land Use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Commercial yard and delivery areas	Medium	0.7	0.6	0.7

To deliver adequate treatment, the selected SuDS components should have a total pollution mitigation index (for each contaminant type) that equals or exceeds the pollution hazard index (for each contaminant type).

SUDs Mitigation Indices (Table 26.4 of SuDS Manual):

Type of SUDs component (Within development)	Mitigation indices		
	TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7

As is demonstrated above the proposals provide suitable treatment to surface water runoff from the development prior to discharge into the existing watercourse.

Appendix E of this technical note includes the SuDS Management and Maintenance Plan for this development.

Summary and Conclusions:

This Foul and Surface Water Drainage Technical Note has been prepared on behalf of Hi-Acre Construction Ltd in respect of the approved planning application for 23 commercial units off of Kanes Hill, Southampton. Planning Approval Ref: 0/18/82750.

This note has been prepared to provide the information requested specifically by Planning Conditions 23 (foul water drainage) and 24 (surface water drainage). This note along with its appendices provide all the requested information within Condition 23 and 24 and should now allow EBC to recommend discharge of Condition 23 and 24 of the Outline Application 0/18/82750.

Appendices:

Appendix A: Foul Water Drainage Strategy

Appendix B: Site Investigation Data

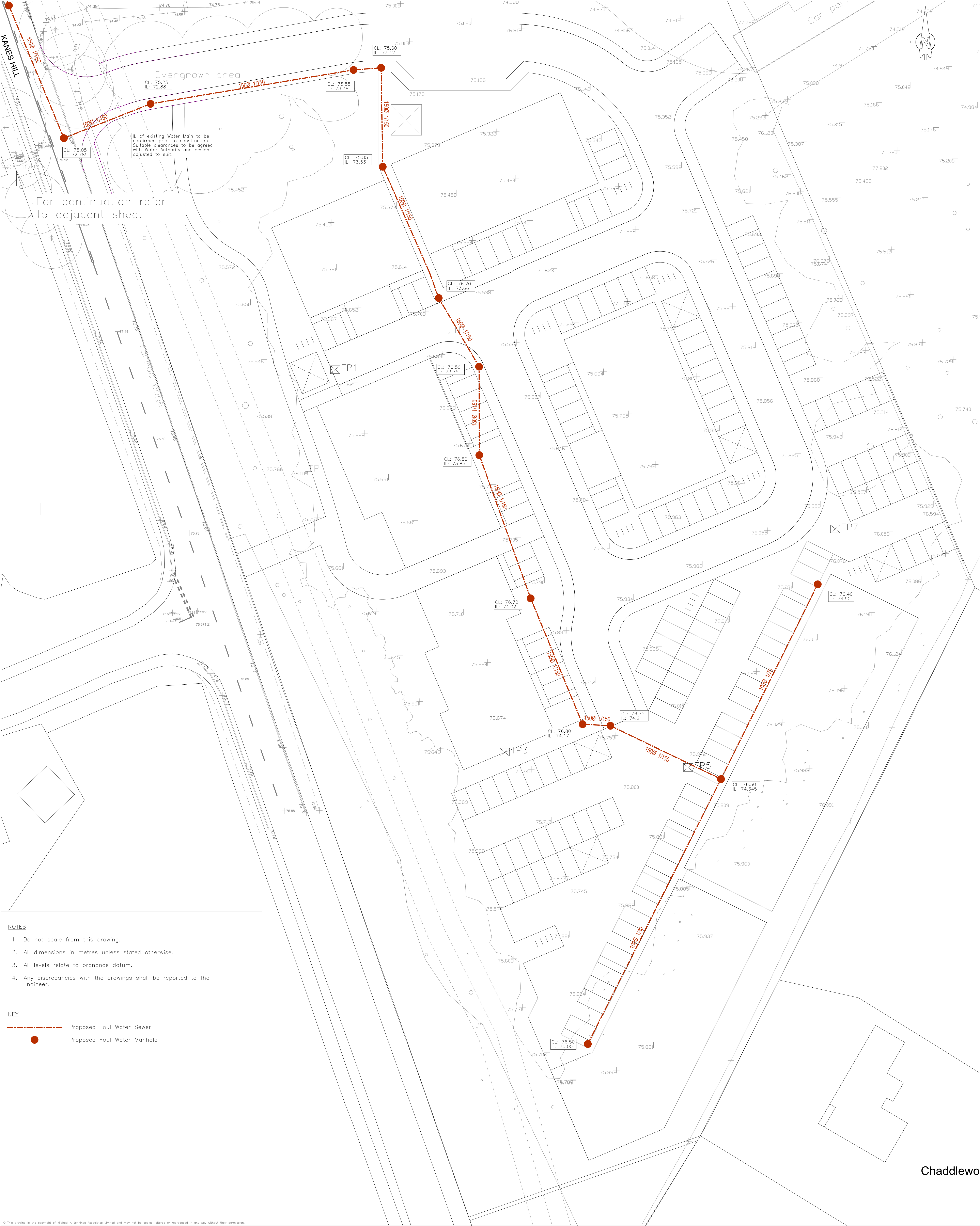
Appendix C: Surface Water Drainage Strategy

Appendix D: Surface Water Drainage Calculations

Appendix E: SuDS Maintenance and Management Plan



Appendix A: Foul Water Drainage Strategy

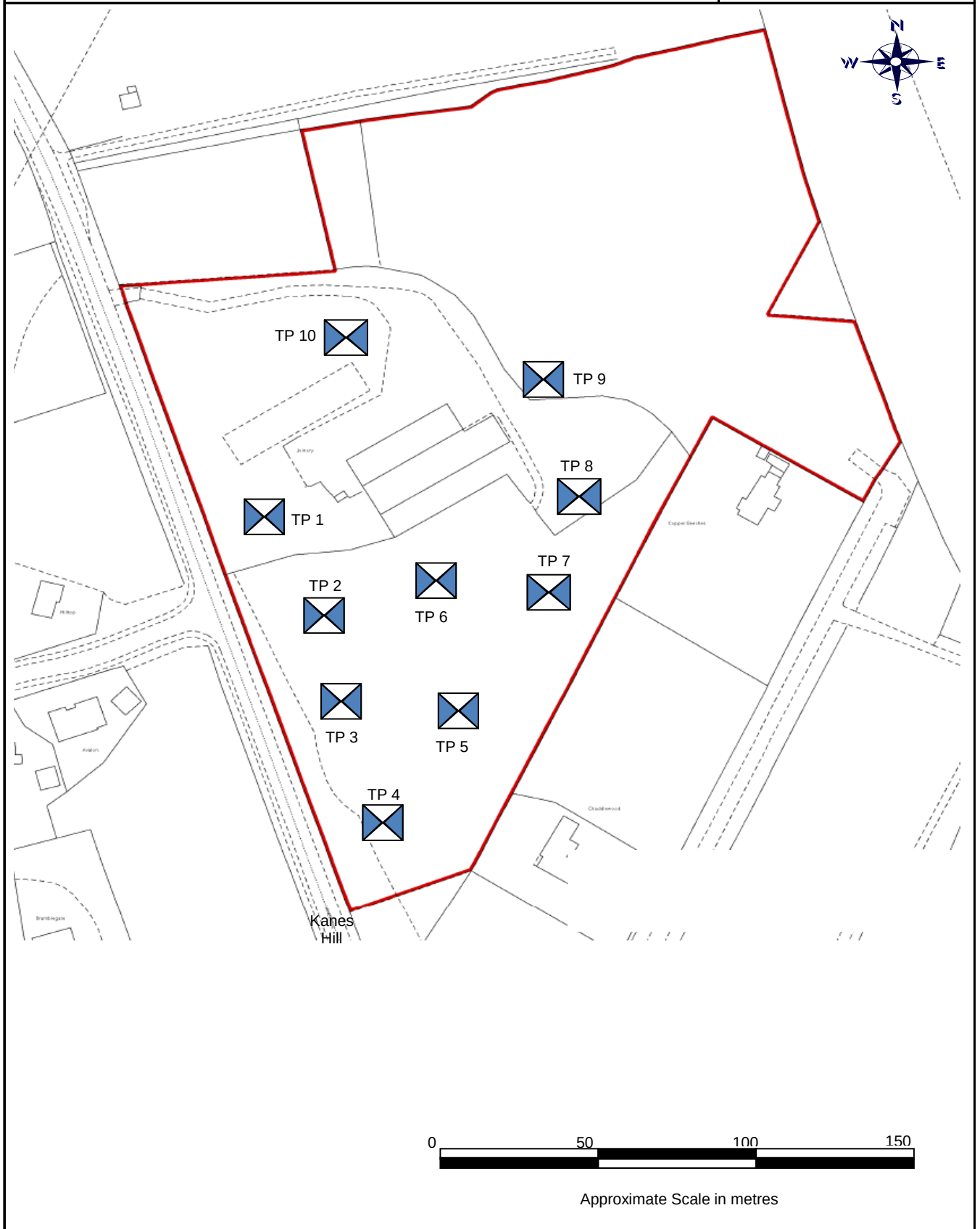




Appendix B:
Site Investigation Data

Site Kanes Hill Development Site

Client Redlane Limited



Site Kanes Hill Development Site

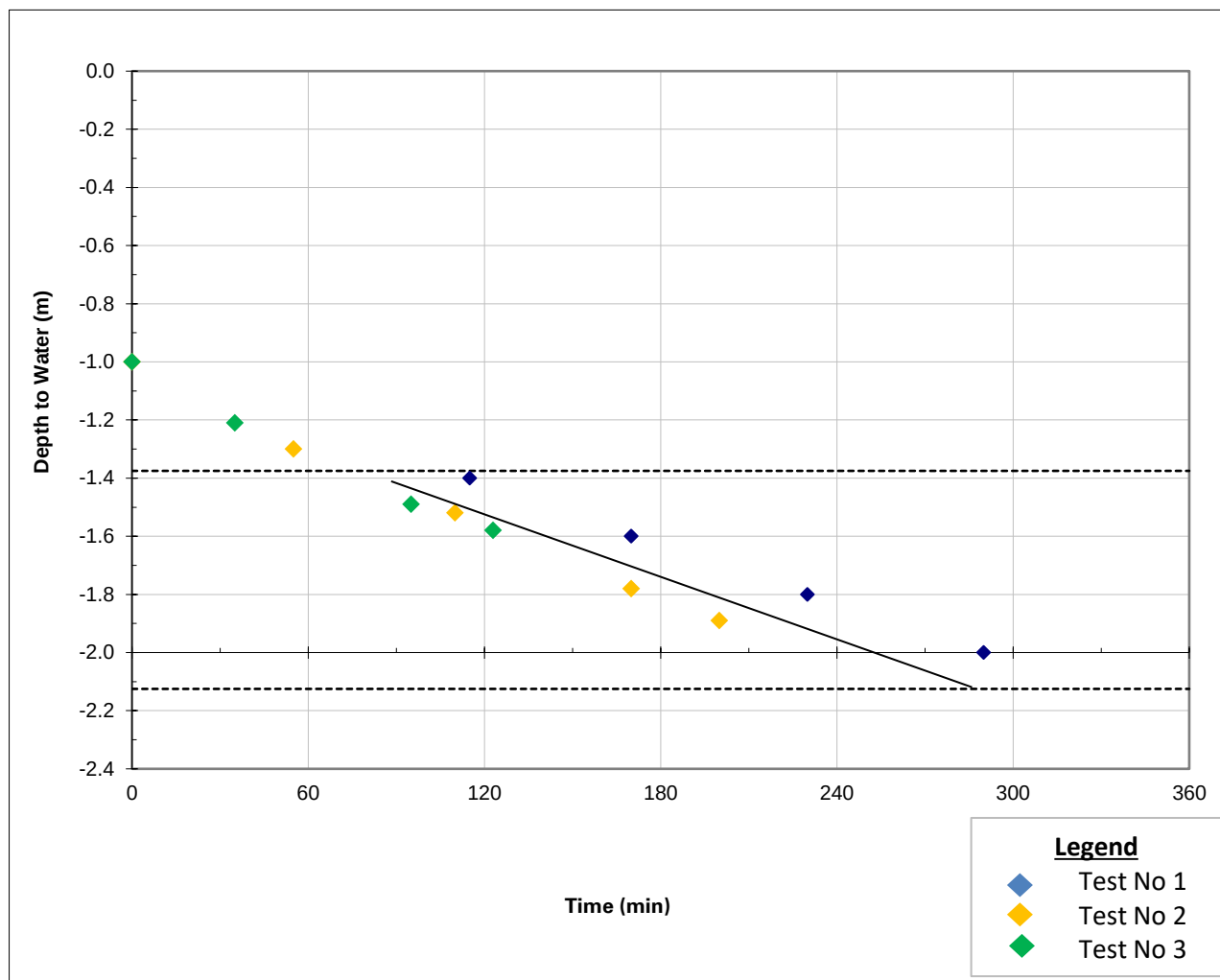
Client Redlane Limited

Trial Pit No. 1

Pit Length (m) 1.5

Pit Width (m) 0.6

Pit Depth (m) 2.5



Design Soakage Rate 9.8E-06 m/s (based on linear portion of graph as shown)
0.85 m/day

Notes

Trial pit log presented separately
Soakage test carried out in accordance with requirements of BRE365 with three fills

Site Kanes Hill Development Site

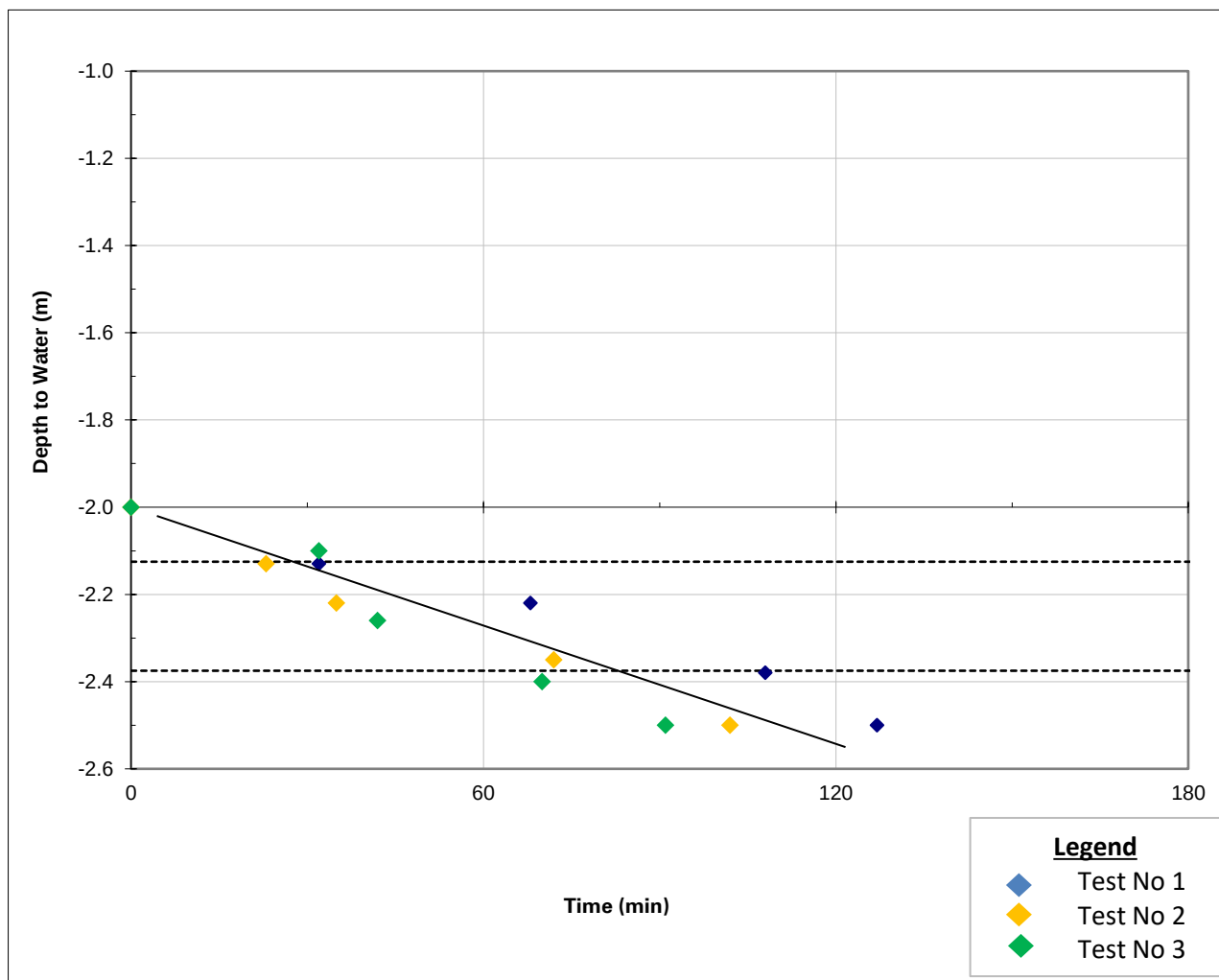
Client Redlane Limited

Trial Pit No. 3

Pit Length (m) 1.5

Pit Width (m) 0.6

Pit Depth (m) 2.5



Design Soakage Rate 3.0E-05 m/s (based on linear portion of graph as shown)
 2.62 m/day

Notes

Trial pit log presented separately
Soakage test carried out in accordance with requirements of BRE365 with three fills

Site Kanes Hill Development Site

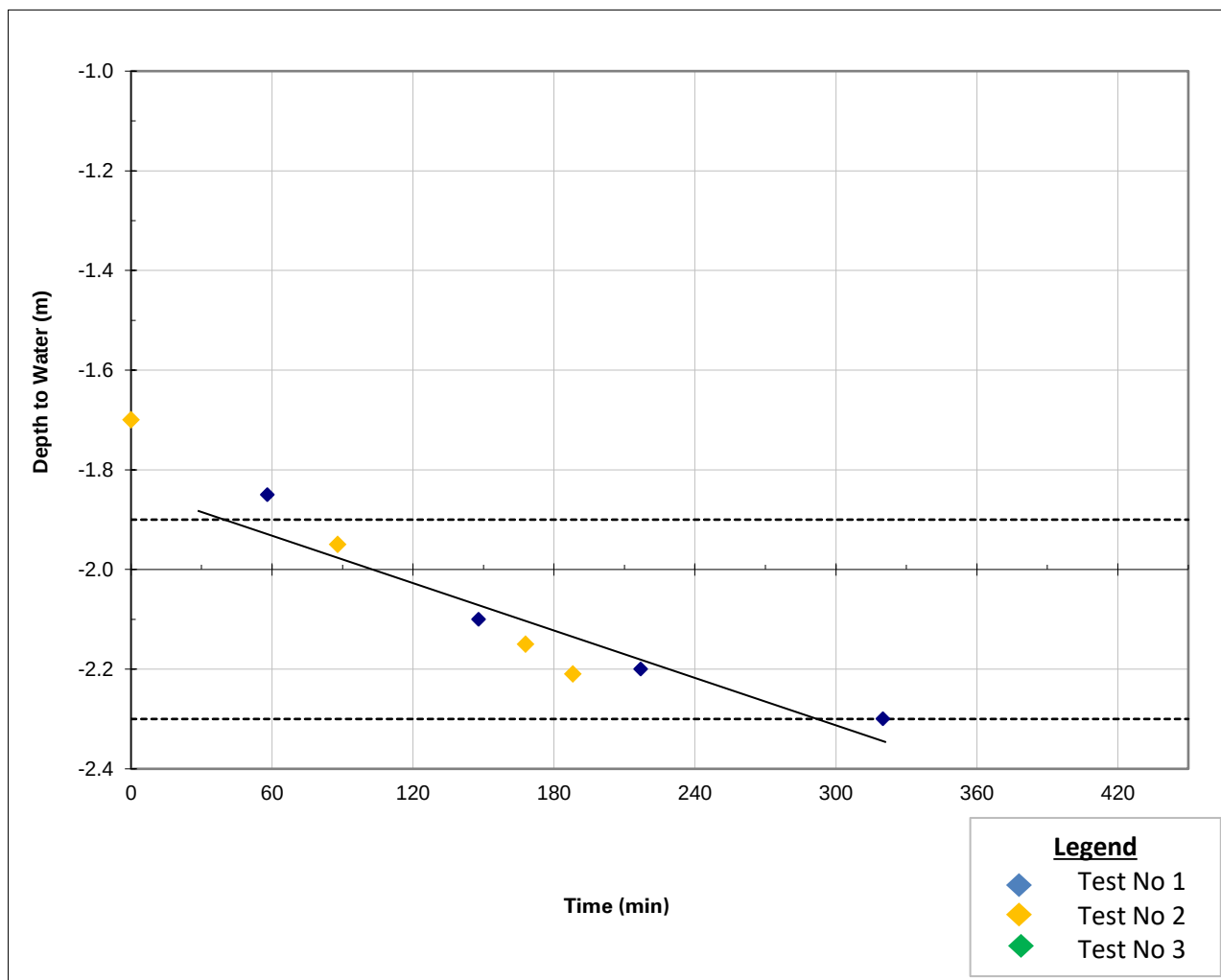
Client Redlane Limited

Trial Pit No. 5

Pit Length (m) 1.5

Pit Width (m) 0.6

Pit Depth (m) 2.5



Design Soakage Rate 9.4E-06 m/s (based on linear portion of graph as shown)
0.81 m/day

Notes

Trial pit log presented separately
Soakage test carried out in general accordance with requirements of BRE365 although only two fills completed

Site Kanes Hill Development Site

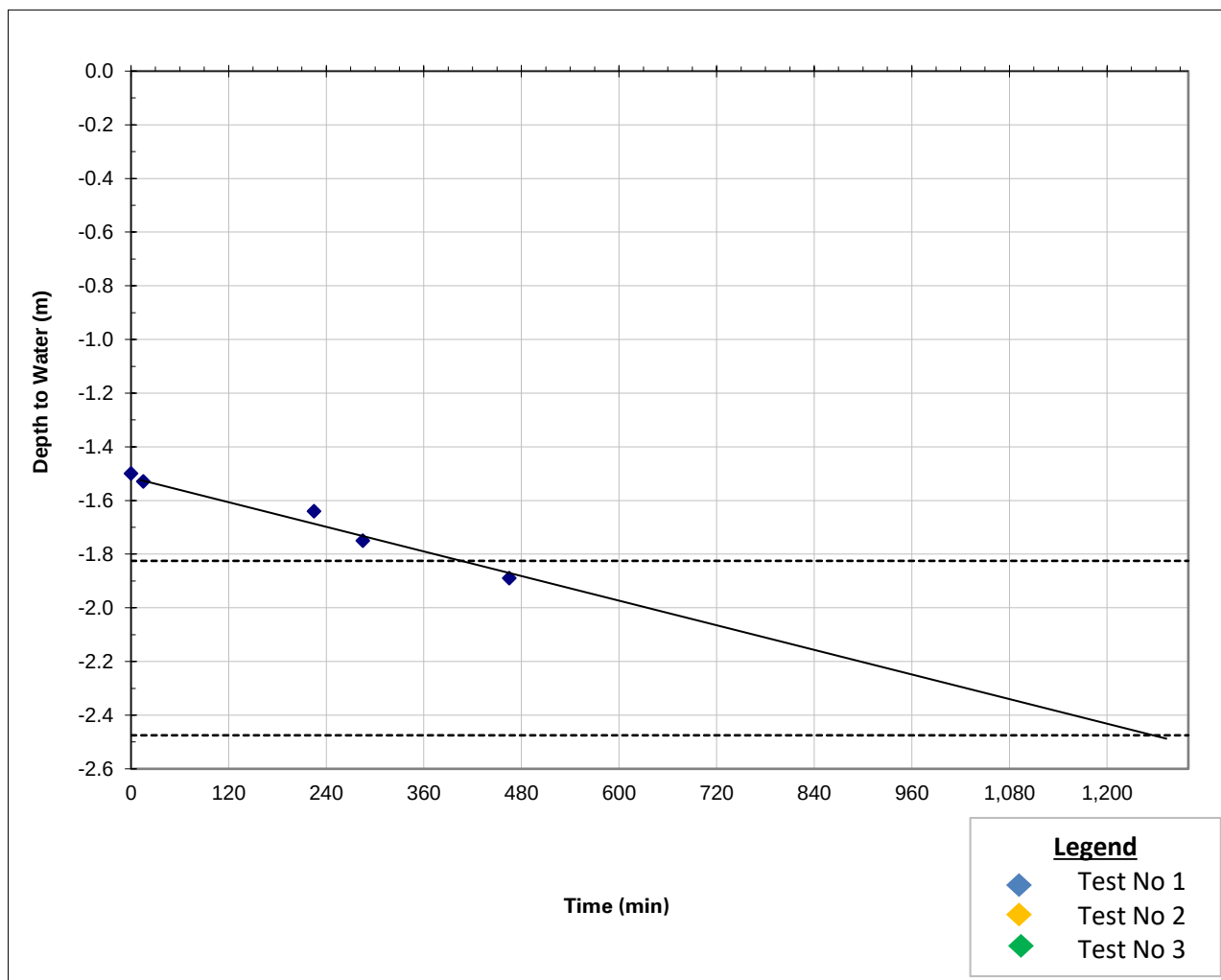
Client Redlane Limited

Trial Pit No. 7

Pit Length (m) 1.5

Pit Width (m) 0.6

Pit Depth (m) 2.8



Design Soakage Rate 2.1E-06 m/s (based on linear portion of graph as shown)
 0.18 m/day

Notes

Trial pit log presented separately
Soakage test carried out in accordance with BRE365 although only one fill was completed

Project Name

Kanesh Hill

Project No.

J17118

Co-ords: -

Level: -

Date

19/06/2017

Location: Nursling, Southampton

Dimensions: -

Depth

2.50m

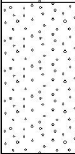
Scale

1:25

Client: Redlane Ltd

Logged By

DPB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.50	D		0.20			TOPSOIL with abundant rootlets	
						Pale grey silty sandy fine to medium flint GRAVEL	
1.00	D		0.70			Dark brown and dark orange-brown silty sandy locally silty clayey fine to medium flint GRAVEL	1
						Pale orange-brown and pale grey mottled slightly clayey silty fine to medium SAND	
1.50	D		1.20				
2.00	D		2.00			Orange-brown and pale grey silty sandy fine to medium flint GRAVEL	2
2.50	D		2.50				
Trialpit Complete at 2.50 m							3
							4

Remarks: Trial pit sides stable. Trial pit terminated in dense gravel.

Groundwater: Groundwater not encountered.



Project Name
 Kanes Hill

 Project No.
 J17118

 Co-ords: -
 Level: -

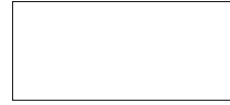
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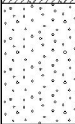
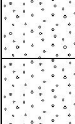
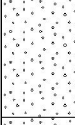
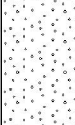
Location: Nursling, Southampton

Dimensions: -

 Scale
 1:25

Client: Redlane Ltd

 Depth
 2.50m

 Logged By
 DPB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
						TOPSOIL	
0.50	D		0.20			Pale grey silty sandy fine to medium flint GRAVEL	
			0.60				
			0.70			Dark brown silty sandy clayey fine to medium flint GRAVEL	
1.00	D					Orange-brown very sandy slightly silty fine to medium flint GRAVEL locally clayey	1
			1.20				
1.50	D					Orange-brown silty sandy fine to medium flint GRAVEL	
			1.80				
2.00	D					Yellowish brown silty fine to medium flint GRAVEL	2
2.50	D		2.50			Trialpit Complete at 2.50 m	3
							4

Remarks: Trial pit sides stable.

Groundwater: Groundwater not encountered.



Project Name
 Kanes Hill

 Project No.
 J17118

 Co-ords: -
 Level: -

 Date
 19/06/2017

Location: Nursling, Southampton

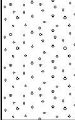
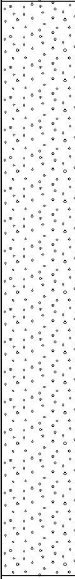
Dimensions: -

 Scale
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Client: Redlane Ltd

 Depth
 2.50m

 Logged By
 DPB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
			0.20			TOPSOIL with abundant gravel	
0.50 0.50	D D		0.60			Pale grey silty sandy fine to medium flint GRAVEL	
1.00 1.00	D D					Orange-brown silty sandy clayey sandy fine to medium flint GRAVEL	1
2.00	D						2
2.50	D		2.50			Trialpit Complete at 2.50 m	3
							4

Remarks: Trial pit sides stable.

Groundwater: Groundwater not encountered.



Project Name
 Kanes Hill

 Project No.
 J17118

 Co-ords: -
 Level: -

 Date
 19/06/2017

Location: Nursling, Southampton

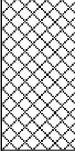
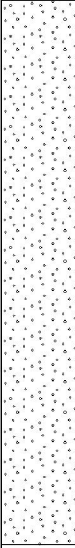
Dimensions: -

 Depth
 2.50m

 Scale
 1:25

Client: Redlane Ltd

 Logged By
 DPB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.50	D		0.50			MADE GROUND (reworked topsoil with brick)	
			0.70			Dark orange-brown clayey silty SAND	
1.00	D					Orange-brown silty sandy fine to medium coarse flint GRAVEL	1
1.50	D						
2.00	D						2
2.50	D		2.50			Trialpit Complete at 2.50 m	3
							4

Remarks: Trial pit sides stable.

Groundwater: Groundwater not encountered.



Project Name Kanes Hill	Project No. J17118	Co-ords: - Level: -	Date 19/06/2017
Location: Nursling , Southampton		Dimensions: - Depth 2.30m	Scale 1:25
Client: Redlane Ltd			Logged By DPB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.50	D		0.35 0.45			MADE GROUND (reworked topsoil with gravel)	
						Pale grey and dark brown silty sandy fine to medium flint GRAVEL	
						Orange-brown silty sandy fine to medium flint GRAVEL	
1.00	D						1
1.50	D						
2.00	D						2
2.30	D		2.30			Trialpit Complete at 2.30 m	3
							4

Remarks:

Groundwater: Groundwater not encountered.



Project Name

Kanes Hill

Project No.

J17118

Co-ords: -

Level: -

Date

19/06/2017

Location: Nursling, Southampton

Dimensions: -

Depth

2.50m

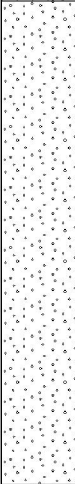
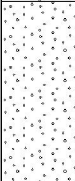
Scale

1:25

Client: Redlane Ltd

Logged By

DPB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
			0.30			MADE GROUND (reworked topsoil with abundant roots and rootlets)	
0.50	D					Orange-brown silty sandy locally clayey fine to medium flint GRAVEL	
1.00	D						1
1.50	D						
			1.90			Firm pale yellowish brown and pale grey GRAVEL	2
2.00	D						
2.50	D		2.50			Trialpit Complete at 2.50 m	3
							4

Remarks: Trial pit sides stable

Groundwater: Groundwater seepage at 1.90m.

Project Name
 Kanes Hill

 Project No.
 J17118

 Co-ords: -
 Level: -

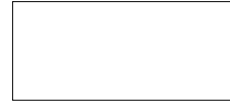
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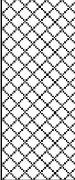
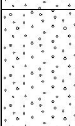
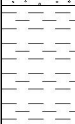
Location: Nursling, Southampton

Dimensions: -

 Scale
 1:25

Client: Redlane Ltd

 Depth
 2.80m

 Logged By
 DPB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.50	D		0.60			MADE GROUND (reworked topsoil with brick)	
1.00	D					Yellowish brown and orange-brown silty sandy fine to medium coarse flint GRAVEL	1
1.50	D						
2.00	D		2.00			Yellowish brown and pale grey silty sandy slightly clayey fine to medium flint GRAVEL	2
2.50	D		2.40			Firm locally stiff yellowish brown, orange-brown, pale grey mottled silty locally sandy and very sandy CLAY	
2.80	D		2.80			Trialpit Complete at 2.80 m	3
							4

Remarks: Trial pit sides stable.

Groundwater: Groundwater not encountered.



Project Name

Kanes Hill

Project No.

J17118

Co-ords: -

Level: -

Date

19/06/2017

Location: Nursling, Southampton

Dimensions: -

Depth

2.50m

Scale

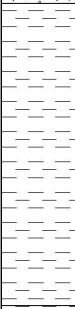
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Client:

Redlane Ltd

Logged By

DPB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
						TOPSOIL	
0.50	D		0.40			Orange-brown fine to medium coarse flint GRAVEL	
1.00	D						1
1.50	D		1.50			Firm becoming stiff pale grey with pale brown mottled silty CLAY	
2.00	D						2
2.50	D		2.50			Trialpit Complete at 2.50 m	
							3
							4

Remarks: Trial pit sides stable.

Groundwater: Groundwater not encountered.



Project Name
 Kanes Hill

 Project No.
 J17118

 Co-ords: -
 Level: -

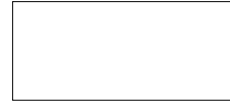
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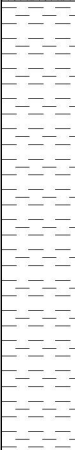
Location: Nursling, Southampton

Dimensions: -

 Scale
 1:25

Client: Redlane Ltd

 Depth
 2.50m

 Logged By
 DPB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
						TOPSOIL	
0.50	D		0.30			Firm pale grey and orange-brown silty very sandy CLAY with occasional bands of orange-brown silty very sandy clayey fine to medium flint gravel	
1.00	D						1
1.50	D						
			1.80			Firm pale grey and pale orange-brown very silty sandy CLAY	
2.00	D						2
2.50	D		2.50				
						Trialpit Complete at 2.50 m	
							3
							4

Remarks:

Groundwater: Groundwater not encountered.



Project Name
 Kanes Hill

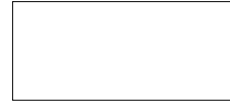
 Project No.
 J17118

 Co-ords: -
 Level: -

 Date
 19/06/2017

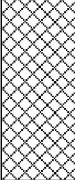
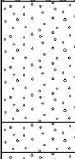
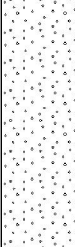
Location: Nursling, Southampton

Dimensions: -

 Depth
 2.30m

 Scale
 1:25

Client: Redlane Ltd

 Logged By
 DPB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.50	D		0.60			MADE GROUND (reworked topsoil)	
1.00	D		1.00 1.10			Pale grey silty sandy fine to medium coarse flint GRAVEL	
						Dark brown silty sandy fine to medium coarse flint GRAVEL with rootlets - possible relic topsoil	1
1.50	D					Orange-brown silty sandy fine to medium flint GRAVEL with occasional flint cobbles	
2.00	D						2
2.30	D		2.30			Trialpit Complete at 2.30 m	
							3
							4

Remarks: Trial pit sides stable.

Groundwater: Groundwater not encountered.



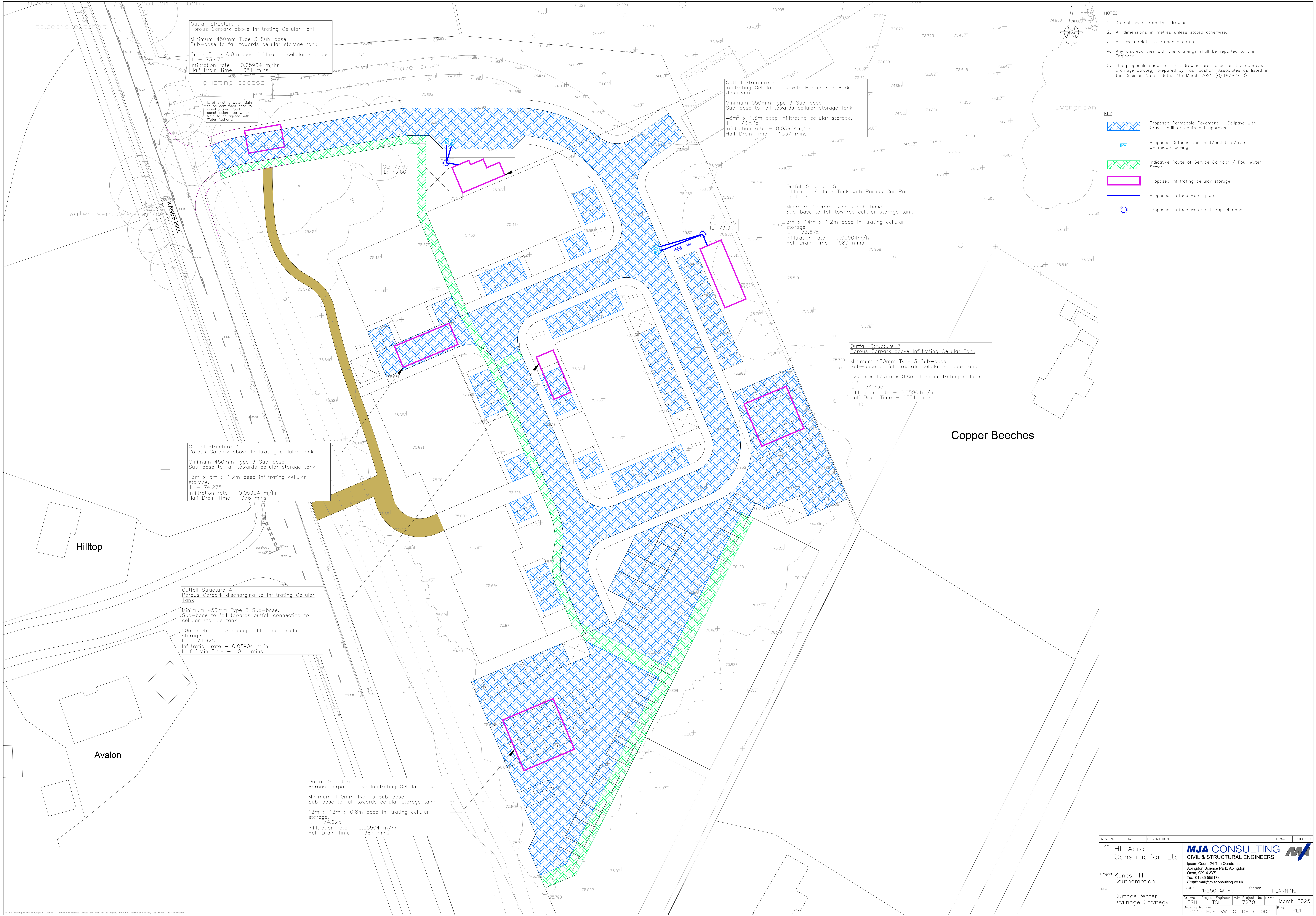
Appendix C:
Surface Water Drainage Strategy



REV. No.	DATE	DESCRIPTION	DRAWN	CHECKED
Client: HI-Acre Construction Ltd				
Project: Kanes Hill, Southampton				
Title: Proposed Levels Strategy				
Scale: 1:250 @ A0		Status: PLANNING		
Drawn: TSH	Project Engineer: TSH	MJA Project No: 7230	Date: March 2025	
Drawing Number: 7230-MJA-SW-XX-DR-C-001	Rev: PL1			

MJA CONSULTING
CIVIL & STRUCTURAL ENGINEERS

Ipsum Court, 24 The Quadrant,
Abingdon Science Park, Abingdon
Oxon, OX14 3YB
Tel: 01235 555173
Email: mail@mjaconsulting.co.uk





NOTES

1. Do not scale from this drawing.
2. All dimensions are in metres unless stated otherwise.
3. Impermeable area used for the calculations is 100% of the catchment thus removing the requirement to add 10% for urban creep.

KEY

Proposed Surface Water Catchment 1
Proposed Outfall 1
Area – 0.277 Ha
IMP Area (100%) – 0.277 Ha

Proposed Surface Water Catchment 2
Proposed Outfall 2
Area – 0.339 Ha
IMP Area (100%) – 0.339 Ha

Proposed Surface Water Catchment 3
Proposed Outfall 3
Area – 0.14 Ha
IMP Area (100%) – 0.14 Ha

Proposed Surface Water Catchment 4
Proposed Outfall 4
Area – 0.079 Ha
IMP Area (100%) – 0.079 Ha

Proposed Surface Water Catchment 5
Proposed Outfall 5
Area – 0.125 Ha
IMP Area (100%) – 0.125 Ha

Proposed Surface Water Catchment 6
Proposed Outfall 6
Area – 0.164 Ha
IMP Area (100%) – 0.164 Ha

Proposed Surface Water Catchment 7
Proposed Outfall 7
Area – 0.057 Ha
IMP Area (100%) – 0.057 Ha

Proposed Catchment Flow Arrow

Proposed Outfall – Infiltrating Cellular Tank.
Refer to drawing 7230-MJA-SW-XX-DR-C-003 & 007 for further details.

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REV. No.	DATE	DESCRIPTION	DRAWN	CHECKED
Client		HI-Acre Construction Ltd	MJA CONSULTING CIVIL & STRUCTURAL ENGINEERS Ipsum Court, 24 The Quadrant, Abingdon Science Park, Abingdon Oxon, OX14 3YB Tel: 01235 555173 Email: mail@mjaconsulting.co.uk	
Project		Kanes Hill, Southampton	Status: PLANNING	
Title		Surface Water Catchment Plan	Scale: 1:250 @ A0	
Drawn: TSH		Project Engineer: TSH	MJA Project No: 7230	Date: March 2025
Drawing Number: 7230-MJA-SW-XX-DR-C-004		Rev: PL1		



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REV. No.	DATE	DESCRIPTION	DRAWN	CHECKED
Client: HI-Acre Construction Ltd				
Project: Kanes Hill, Southampton				
Title: Surface Water Exceedance Plan				
Scale: 1:250 @ A0		Status: PLANNING		
Drawn: TSH	Project Engineer: TSH	MJA Project No: 7230	Date: March 2025	
Drawing Number: 7230-MJA-SW-XX-DR-C-005	Rev: PL1			

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CIVIL & STRUCTURAL ENGINEERS
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Appendix D:
Surface Water Drainage Calculations

MJA Consulting				Page 1																																																																																																																																																																																																																			
Ipsum Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS		Kanes Hill SW Strategy Outfall 1																																																																																																																																																																																																																					
Date 16/06/2025 14:24 File 7230 - SW OUTFALL STRUC...		Designed by TSH Checked by KG																																																																																																																																																																																																																					
Innovyze		Source Control 2020.1.3																																																																																																																																																																																																																					
Summary of Results for 100 year Return Period (+40%) Half Drain Time : 1387 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>75.372</td><td>0.447</td><td>1.2</td><td>61.2</td><td>O K</td></tr><tr><td>30 min Summer</td><td>75.537</td><td>0.612</td><td>1.2</td><td>83.8</td><td>O K</td></tr><tr><td>60 min Summer</td><td>75.712</td><td>0.787</td><td>1.2</td><td>107.7</td><td>O K</td></tr><tr><td>120 min Summer</td><td>75.896</td><td>0.971</td><td>1.2</td><td>131.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>75.940</td><td>1.015</td><td>1.2</td><td>143.9</td><td>O K</td></tr><tr><td>240 min Summer</td><td>75.963</td><td>1.038</td><td>1.2</td><td>151.6</td><td>O K</td></tr><tr><td>360 min Summer</td><td>75.993</td><td>1.068</td><td>1.2</td><td>161.6</td><td>O K</td></tr><tr><td>480 min Summer</td><td>76.010</td><td>1.085</td><td>1.2</td><td>167.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>76.020</td><td>1.095</td><td>1.2</td><td>170.3</td><td>O K</td></tr><tr><td>720 min Summer</td><td>76.024</td><td>1.099</td><td>1.2</td><td>171.6</td><td>O K</td></tr><tr><td>960 min Summer</td><td>76.022</td><td>1.097</td><td>1.2</td><td>171.0</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>76.003</td><td>1.078</td><td>1.2</td><td>164.8</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>75.974</td><td>1.049</td><td>1.2</td><td>155.1</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>75.947</td><td>1.022</td><td>1.2</td><td>146.3</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>75.888</td><td>0.963</td><td>1.2</td><td>129.2</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>75.792</td><td>0.867</td><td>1.2</td><td>112.8</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>75.639</td><td>0.714</td><td>1.2</td><td>97.6</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>75.535</td><td>0.610</td><td>1.2</td><td>83.5</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>75.441</td><td>0.516</td><td>1.2</td><td>70.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>75.432</td><td>0.507</td><td>1.2</td><td>69.3</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>131.128</td><td>0.0</td><td>26</td></tr><tr><td>30 min Summer</td><td>88.088</td><td>0.0</td><td>41</td></tr><tr><td>60 min Summer</td><td>56.422</td><td>0.0</td><td>70</td></tr><tr><td>120 min Summer</td><td>34.839</td><td>0.0</td><td>130</td></tr><tr><td>180 min Summer</td><td>25.861</td><td>0.0</td><td>188</td></tr><tr><td>240 min Summer</td><td>20.787</td><td>0.0</td><td>248</td></tr><tr><td>360 min Summer</td><td>15.300</td><td>0.0</td><td>366</td></tr><tr><td>480 min Summer</td><td>12.289</td><td>0.0</td><td>486</td></tr><tr><td>600 min Summer</td><td>10.359</td><td>0.0</td><td>604</td></tr><tr><td>720 min Summer</td><td>9.004</td><td>0.0</td><td>724</td></tr><tr><td>960 min Summer</td><td>7.211</td><td>0.0</td><td>960</td></tr><tr><td>1440 min Summer</td><td>5.263</td><td>0.0</td><td>1220</td></tr><tr><td>2160 min Summer</td><td>3.833</td><td>0.0</td><td>1588</td></tr><tr><td>2880 min Summer</td><td>3.056</td><td>0.0</td><td>1992</td></tr><tr><td>4320 min Summer</td><td>2.218</td><td>0.0</td><td>2812</td></tr><tr><td>5760 min Summer</td><td>1.764</td><td>0.0</td><td>3624</td></tr><tr><td>7200 min Summer</td><td>1.478</td><td>0.0</td><td>4400</td></tr><tr><td>8640 min Summer</td><td>1.279</td><td>0.0</td><td>5184</td></tr><tr><td>10080 min Summer</td><td>1.133</td><td>0.0</td><td>5856</td></tr><tr><td>15 min Winter</td><td>131.128</td><td>0.0</td><td>26</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	75.372	0.447	1.2	61.2	O K	30 min Summer	75.537	0.612	1.2	83.8	O K	60 min Summer	75.712	0.787	1.2	107.7	O K	120 min Summer	75.896	0.971	1.2	131.4	O K	180 min Summer	75.940	1.015	1.2	143.9	O K	240 min Summer	75.963	1.038	1.2	151.6	O K	360 min Summer	75.993	1.068	1.2	161.6	O K	480 min Summer	76.010	1.085	1.2	167.2	O K	600 min Summer	76.020	1.095	1.2	170.3	O K	720 min Summer	76.024	1.099	1.2	171.6	O K	960 min Summer	76.022	1.097	1.2	171.0	O K	1440 min Summer	76.003	1.078	1.2	164.8	O K	2160 min Summer	75.974	1.049	1.2	155.1	O K	2880 min Summer	75.947	1.022	1.2	146.3	O K	4320 min Summer	75.888	0.963	1.2	129.2	O K	5760 min Summer	75.792	0.867	1.2	112.8	O K	7200 min Summer	75.639	0.714	1.2	97.6	O K	8640 min Summer	75.535	0.610	1.2	83.5	O K	10080 min Summer	75.441	0.516	1.2	70.6	O K	15 min Winter	75.432	0.507	1.2	69.3	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	131.128	0.0	26	30 min Summer	88.088	0.0	41	60 min Summer	56.422	0.0	70	120 min Summer	34.839	0.0	130	180 min Summer	25.861	0.0	188	240 min Summer	20.787	0.0	248	360 min Summer	15.300	0.0	366	480 min Summer	12.289	0.0	486	600 min Summer	10.359	0.0	604	720 min Summer	9.004	0.0	724	960 min Summer	7.211	0.0	960	1440 min Summer	5.263	0.0	1220	2160 min Summer	3.833	0.0	1588	2880 min Summer	3.056	0.0	1992	4320 min Summer	2.218	0.0	2812	5760 min Summer	1.764	0.0	3624	7200 min Summer	1.478	0.0	4400	8640 min Summer	1.279	0.0	5184	10080 min Summer	1.133	0.0	5856	15 min Winter	131.128	0.0	26
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Ipsum Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS		Kanes Hill SW Strategy Outfall 1			
Date 16/06/2025 14:24 File 7230 - SW OUTFALL STRUC...		Designed by TSH Checked by KG			
Innovyze		Source Control 2020.1.3			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	75.617	0.692	1.2	94.7	O K
60 min Winter	75.853	0.928	1.2	121.7	O K
120 min Winter	75.954	1.029	1.2	148.8	O K
180 min Winter	75.998	1.073	1.2	163.3	O K
240 min Winter	76.026	1.101	1.2	172.4	O K
360 min Winter	76.063	1.138	1.2	184.7	O K
480 min Winter	76.085	1.160	1.2	192.0	O K
600 min Winter	76.099	1.174	1.2	196.4	O K
720 min Winter	76.106	1.181	1.2	199.0	Flood Risk
960 min Winter	76.111	1.186	1.2	200.4	Flood Risk
1440 min Winter	76.096	1.171	1.2	195.4	O K
2160 min Winter	76.056	1.131	1.2	182.3	O K
2880 min Winter	76.019	1.094	1.2	170.1	O K
4320 min Winter	75.942	1.017	1.2	144.5	O K
5760 min Winter	75.839	0.914	1.2	119.2	O K
7200 min Winter	75.625	0.700	1.2	95.7	O K
8640 min Winter	75.470	0.545	1.2	74.5	O K
10080 min Winter	75.332	0.407	1.2	55.6	O K
Storm Event	Rain (mm/hr)		Flooded Volume (m³)	Time-Peak (mins)	
30 min Winter	88.088		0.0	41	
60 min Winter	56.422		0.0	70	
120 min Winter	34.839		0.0	128	
180 min Winter	25.861		0.0	186	
240 min Winter	20.787		0.0	244	
360 min Winter	15.300		0.0	360	
480 min Winter	12.289		0.0	476	
600 min Winter	10.359		0.0	592	
720 min Winter	9.004		0.0	708	
960 min Winter	7.211		0.0	932	
1440 min Winter	5.263		0.0	1364	
2160 min Winter	3.833		0.0	1708	
2880 min Winter	3.056		0.0	2164	
4320 min Winter	2.218		0.0	3068	
5760 min Winter	1.764		0.0	3920	
7200 min Winter	1.478		0.0	4696	
8640 min Winter	1.279		0.0	5456	
10080 min Winter	1.133		0.0	6160	
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Ipsium Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS	Kanes Hill SW Strategy Outfall 1	
Date 16/06/2025 14:24 File 7230 - SW OUTFALL STRUC...	Designed by TSH Checked by KG	
Innovyze		Source Control 2020.1.3

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.900	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.277

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0 4	0.092	4 8	0.092	8 12	0.093

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Ipsum Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS	Kanes Hill SW Strategy Outfall 1																			
Date 16/06/2025 14:24 File 7230 - SW OUTFALL STRUC...	Designed by TSH Checked by KG																			
Innovyze																				
Source Control 2020.1.3																				
Model Details Storage is Online Cover Level (m) 76.400 Complex Structure Cellular Storage Invert Level (m) 74.925 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.05904 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.05904 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>144.0</td><td>144.0</td><td>0.800</td><td>144.0</td><td>147.6</td></tr><tr><td>0.075</td><td>144.0</td><td>147.6</td><td>0.801</td><td>0.0</td><td>147.6</td></tr></tbody></table> Porous Car Park Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 33.2 Membrane Percolation (mm/hr) 1000 Length (m) 33.2 Max Percolation (l/s) 306.2 Slope (1:X) 150.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 75.725 Membrane Depth (m) 230			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	144.0	144.0	0.800	144.0	147.6	0.075	144.0	147.6	0.801	0.0	147.6
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	144.0	144.0	0.800	144.0	147.6															
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Date 16/06/2025 14:27 File 7230 - SW Outfall Struc...		Designed by TSH Checked by KG																																																																																																																																																																																																																					
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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 1351 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>75.233</td><td>0.498</td><td>1.5</td><td>73.8</td><td>O K</td></tr><tr><td>30 min Summer</td><td>75.420</td><td>0.685</td><td>1.5</td><td>101.4</td><td>O K</td></tr><tr><td>60 min Summer</td><td>75.651</td><td>0.916</td><td>1.5</td><td>130.7</td><td>O K</td></tr><tr><td>120 min Summer</td><td>75.750</td><td>1.015</td><td>1.5</td><td>159.8</td><td>O K</td></tr><tr><td>180 min Summer</td><td>75.787</td><td>1.052</td><td>1.5</td><td>175.2</td><td>O K</td></tr><tr><td>240 min Summer</td><td>75.807</td><td>1.072</td><td>1.5</td><td>184.7</td><td>O K</td></tr><tr><td>360 min Summer</td><td>75.833</td><td>1.098</td><td>1.5</td><td>197.1</td><td>O K</td></tr><tr><td>480 min Summer</td><td>75.848</td><td>1.113</td><td>1.5</td><td>204.1</td><td>O K</td></tr><tr><td>600 min Summer</td><td>75.856</td><td>1.121</td><td>1.5</td><td>208.0</td><td>O K</td></tr><tr><td>720 min Summer</td><td>75.860</td><td>1.125</td><td>1.5</td><td>209.8</td><td>O K</td></tr><tr><td>960 min Summer</td><td>75.859</td><td>1.124</td><td>1.5</td><td>209.3</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>75.845</td><td>1.110</td><td>1.5</td><td>202.5</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>75.820</td><td>1.085</td><td>1.5</td><td>191.0</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>75.798</td><td>1.063</td><td>1.5</td><td>180.2</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>75.749</td><td>1.014</td><td>1.5</td><td>159.7</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>75.690</td><td>0.955</td><td>1.5</td><td>140.1</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>75.598</td><td>0.863</td><td>1.5</td><td>122.1</td><td>O K</td></tr><tr><td>8640 min 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Summer</td><td>10.359</td><td>0.0</td><td>604</td></tr><tr><td>720 min Summer</td><td>9.004</td><td>0.0</td><td>722</td></tr><tr><td>960 min Summer</td><td>7.211</td><td>0.0</td><td>960</td></tr><tr><td>1440 min Summer</td><td>5.263</td><td>0.0</td><td>1202</td></tr><tr><td>2160 min Summer</td><td>3.833</td><td>0.0</td><td>1568</td></tr><tr><td>2880 min Summer</td><td>3.056</td><td>0.0</td><td>1968</td></tr><tr><td>4320 min Summer</td><td>2.218</td><td>0.0</td><td>2776</td></tr><tr><td>5760 min Summer</td><td>1.764</td><td>0.0</td><td>3584</td></tr><tr><td>7200 min Summer</td><td>1.478</td><td>0.0</td><td>4392</td></tr><tr><td>8640 min Summer</td><td>1.279</td><td>0.0</td><td>5112</td></tr><tr><td>10080 min Summer</td><td>1.133</td><td>0.0</td><td>5856</td></tr><tr><td>15 min Winter</td><td>131.128</td><td>0.0</td><td>26</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	75.233	0.498	1.5	73.8	O K	30 min Summer	75.420	0.685	1.5	101.4	O K	60 min Summer	75.651	0.916	1.5	130.7	O K	120 min Summer	75.750	1.015	1.5	159.8	O K	180 min Summer	75.787	1.052	1.5	175.2	O K	240 min Summer	75.807	1.072	1.5	184.7	O K	360 min Summer	75.833	1.098	1.5	197.1	O K	480 min Summer	75.848	1.113	1.5	204.1	O K	600 min Summer	75.856	1.121	1.5	208.0	O K	720 min Summer	75.860	1.125	1.5	209.8	O K	960 min Summer	75.859	1.124	1.5	209.3	O K	1440 min Summer	75.845	1.110	1.5	202.5	O K	2160 min Summer	75.820	1.085	1.5	191.0	O K	2880 min Summer	75.798	1.063	1.5	180.2	O K	4320 min Summer	75.749	1.014	1.5	159.7	O K	5760 min Summer	75.690	0.955	1.5	140.1	O K	7200 min Summer	75.598	0.863	1.5	122.1	O K	8640 min Summer	75.449	0.714	1.5	105.8	O K	10080 min Summer	75.351	0.616	1.5	91.2	O K	15 min Winter	75.300	0.565	1.5	83.8	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	131.128	0.0	26	30 min Summer	88.088	0.0	41	60 min Summer	56.422	0.0	70	120 min Summer	34.839	0.0	130	180 min Summer	25.861	0.0	188	240 min Summer	20.787	0.0	248	360 min Summer	15.300	0.0	366	480 min Summer	12.289	0.0	486	600 min Summer	10.359	0.0	604	720 min Summer	9.004	0.0	722	960 min Summer	7.211	0.0	960	1440 min Summer	5.263	0.0	1202	2160 min Summer	3.833	0.0	1568	2880 min Summer	3.056	0.0	1968	4320 min Summer	2.218	0.0	2776	5760 min Summer	1.764	0.0	3584	7200 min Summer	1.478	0.0	4392	8640 min Summer	1.279	0.0	5112	10080 min Summer	1.133	0.0	5856	15 min Winter	131.128	0.0	26
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Innovyze		Source Control 2020.1.3			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	75.510	0.775	1.5	114.8	O K
60 min Winter	75.716	0.981	1.5	147.9	O K
120 min Winter	75.799	1.064	1.5	181.0	O K
180 min Winter	75.837	1.102	1.5	198.9	O K
240 min Winter	75.861	1.126	1.5	210.0	O K
360 min Winter	75.893	1.158	1.5	225.2	O K
480 min Winter	75.912	1.177	1.5	234.2	Flood Risk
600 min Winter	75.923	1.188	1.5	239.7	Flood Risk
720 min Winter	75.930	1.195	1.5	242.9	Flood Risk
960 min Winter	75.935	1.200	1.5	244.9	Flood Risk
1440 min Winter	75.922	1.187	1.5	239.2	Flood Risk
2160 min Winter	75.890	1.155	1.5	223.9	O K
2880 min Winter	75.859	1.124	1.5	209.0	O K
4320 min Winter	75.793	1.058	1.5	178.3	O K
5760 min Winter	75.717	0.982	1.5	148.3	O K
7200 min Winter	75.586	0.851	1.5	121.0	O K
8640 min Winter	75.389	0.654	1.5	97.0	O K
10080 min Winter	75.256	0.521	1.5	77.2	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	88.088	0.0	41		
60 min Winter	56.422	0.0	70		
120 min Winter	34.839	0.0	128		
180 min Winter	25.861	0.0	186		
240 min Winter	20.787	0.0	244		
360 min Winter	15.300	0.0	360		
480 min Winter	12.289	0.0	476		
600 min Winter	10.359	0.0	592		
720 min Winter	9.004	0.0	706		
960 min Winter	7.211	0.0	932		
1440 min Winter	5.263	0.0	1360		
2160 min Winter	3.833	0.0	1692		
2880 min Winter	3.056	0.0	2144		
4320 min Winter	2.218	0.0	3032		
5760 min Winter	1.764	0.0	3872		
7200 min Winter	1.478	0.0	4688		
8640 min Winter	1.279	0.0	5448		
10080 min Winter	1.133	0.0	6152		
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Model Details Storage is Online Cover Level (m) 76.210 Complex Structure Cellular Storage Invert Level (m) 74.735 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.05904 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.05904 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>156.0</td><td>156.0</td><td>0.800</td><td>156.0</td><td>185.7</td></tr><tr><td>0.590</td><td>156.0</td><td>185.7</td><td>0.801</td><td>0.0</td><td>185.7</td></tr></table> Porous Car Park Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 39.7 Membrane Percolation (mm/hr) 1000 Length (m) 39.7 Max Percolation (l/s) 437.8 Slope (1:X) 150.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 75.535 Membrane Depth (m) 230			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	156.0	156.0	0.800	156.0	185.7	0.590	156.0	185.7	0.801	0.0	185.7
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Summer</td><td>10.359</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>9.004</td><td>0.0</td><td>696</td></tr><tr><td>960 min Summer</td><td>7.211</td><td>0.0</td><td>804</td></tr><tr><td>1440 min Summer</td><td>5.263</td><td>0.0</td><td>1048</td></tr><tr><td>2160 min Summer</td><td>3.833</td><td>0.0</td><td>1456</td></tr><tr><td>2880 min Summer</td><td>3.056</td><td>0.0</td><td>1876</td></tr><tr><td>4320 min Summer</td><td>2.218</td><td>0.0</td><td>2684</td></tr><tr><td>5760 min Summer</td><td>1.764</td><td>0.0</td><td>3472</td></tr><tr><td>7200 min Summer</td><td>1.478</td><td>0.0</td><td>4256</td></tr><tr><td>8640 min Summer</td><td>1.279</td><td>0.0</td><td>5016</td></tr><tr><td>10080 min Summer</td><td>1.133</td><td>0.0</td><td>5752</td></tr><tr><td>15 min Winter</td><td>131.128</td><td>0.0</td><td>26</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	74.806	0.531	0.7	32.8	O K	30 min Summer	74.989	0.714	0.7	44.1	O K	60 min Summer	75.181	0.906	0.8	55.9	O K	120 min Summer	75.367	1.092	0.9	67.4	O K	180 min Summer	75.460	1.185	0.9	73.2	O K	240 min Summer	75.587	1.312	0.9	76.5	O K	360 min Summer	75.668	1.393	0.9	80.6	O K	480 min Summer	75.703	1.428	0.9	82.4	O K	600 min Summer	75.714	1.439	0.9	82.9	O K	720 min Summer	75.709	1.434	0.9	82.6	O K	960 min Summer	75.687	1.412	0.9	81.5	O K	1440 min Summer	75.627	1.352	0.9	78.4	O K	2160 min Summer	75.465	1.190	0.9	73.5	O K	2880 min Summer	75.391	1.116	0.9	68.9	O K	4320 min Summer	75.256	0.981	0.8	60.6	O K	5760 min Summer	75.134	0.859	0.8	53.0	O K	7200 min Summer	75.026	0.751	0.8	46.4	O K	8640 min Summer	74.930	0.655	0.7	40.5	O K	10080 min Summer	74.845	0.570	0.7	35.2	O K	15 min Winter	74.873	0.598	0.7	36.9	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	131.128	0.0	26	30 min Summer	88.088	0.0	41	60 min Summer	56.422	0.0	70	120 min Summer	34.839	0.0	128	180 min Summer	25.861	0.0	188	240 min Summer	20.787	0.0	246	360 min Summer	15.300	0.0	364	480 min Summer	12.289	0.0	482	600 min Summer	10.359	0.0	602	720 min Summer	9.004	0.0	696	960 min Summer	7.211	0.0	804	1440 min Summer	5.263	0.0	1048	2160 min Summer	3.833	0.0	1456	2880 min Summer	3.056	0.0	1876	4320 min Summer	2.218	0.0	2684	5760 min Summer	1.764	0.0	3472	7200 min Summer	1.478	0.0	4256	8640 min Summer	1.279	0.0	5016	10080 min Summer	1.133	0.0	5752	15 min Winter	131.128	0.0	26
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Date 16/06/2025 14:28 File 7230 - SW Outfall Struc...		Designed by TSH Checked by KG			
Innovyze		Source Control 2020.1.3			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	75.079	0.804	0.8	49.6	O K
60 min Winter	75.295	1.020	0.8	63.0	O K
120 min Winter	75.578	1.303	0.9	76.1	O K
180 min Winter	75.715	1.440	0.9	83.0	O K
240 min Winter	75.795	1.520	0.9	87.0	O K
360 min Winter	75.897	1.622	0.9	92.3	Flood Risk
480 min Winter	75.955	1.680	0.9	95.0	Flood Risk
600 min Winter	75.998	1.723	0.9	96.2	Flood Risk
720 min Winter	76.020	1.745	0.9	96.6	Flood Risk
960 min Winter	75.975	1.700	0.9	95.6	Flood Risk
1440 min Winter	75.884	1.609	0.9	91.6	Flood Risk
2160 min Winter	75.745	1.470	0.9	84.5	O K
2880 min Winter	75.607	1.332	0.9	77.5	O K
4320 min Winter	75.327	1.052	0.8	65.0	O K
5760 min Winter	75.150	0.875	0.8	54.0	O K
7200 min Winter	74.996	0.721	0.7	44.5	O K
8640 min Winter	74.864	0.589	0.7	36.3	O K
10080 min Winter	74.748	0.473	0.7	29.2	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	88.088	0.0	40		
60 min Winter	56.422	0.0	70		
120 min Winter	34.839	0.0	126		
180 min Winter	25.861	0.0	184		
240 min Winter	20.787	0.0	242		
360 min Winter	15.300	0.0	358		
480 min Winter	12.289	0.0	472		
600 min Winter	10.359	0.0	586		
720 min Winter	9.004	0.0	696		
960 min Winter	7.211	0.0	908		
1440 min Winter	5.263	0.0	1130		
2160 min Winter	3.833	0.0	1584		
2880 min Winter	3.056	0.0	2024		
4320 min Winter	2.218	0.0	2900		
5760 min Winter	1.764	0.0	3744		
7200 min Winter	1.478	0.0	4536		
8640 min Winter	1.279	0.0	5280		
10080 min Winter	1.133	0.0	6056		
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Model Details Storage is Online Cover Level (m) 76.150 Complex Structure Cellular Storage Invert Level (m) 74.275 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.05904 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.05904 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>65.0</td><td>65.0</td><td>1.201</td><td>0.0</td><td>108.2</td></tr><tr><td>1.200</td><td>65.0</td><td>108.2</td><td></td><td></td><td></td></tr></tbody></table> Porous Car Park Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 8.5 Membrane Percolation (mm/hr) 1000 Length (m) 20.0 Max Percolation (l/s) 47.2 Slope (1:X) 150.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 75.475 Membrane Depth (m) 230			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	65.0	65.0	1.201	0.0	108.2	1.200	65.0	108.2			
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Summer</td><td>76.082</td><td>1.157</td><td>0.4</td><td>46.3</td><td>O K</td></tr><tr><td>600 min Summer</td><td>76.088</td><td>1.163</td><td>0.4</td><td>46.7</td><td>O K</td></tr><tr><td>720 min Summer</td><td>76.087</td><td>1.162</td><td>0.4</td><td>46.6</td><td>O K</td></tr><tr><td>960 min Summer</td><td>76.076</td><td>1.151</td><td>0.4</td><td>45.9</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>76.046</td><td>1.121</td><td>0.4</td><td>43.9</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>76.001</td><td>1.076</td><td>0.4</td><td>40.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>75.958</td><td>1.033</td><td>0.4</td><td>38.0</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>75.848</td><td>0.923</td><td>0.4</td><td>32.5</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>75.649</td><td>0.724</td><td>0.4</td><td>27.5</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>75.533</td><td>0.608</td><td>0.4</td><td>23.1</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>75.438</td><td>0.513</td><td>0.4</td><td>19.5</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>75.361</td><td>0.436</td><td>0.4</td><td>16.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>75.457</td><td>0.532</td><td>0.4</td><td>20.2</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>131.128</td><td>0.0</td><td>23</td></tr><tr><td>30 min Summer</td><td>88.088</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>56.422</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>34.839</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>25.861</td><td>0.0</td><td>186</td></tr><tr><td>240 min Summer</td><td>20.787</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>15.300</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>12.289</td><td>0.0</td><td>482</td></tr><tr><td>600 min Summer</td><td>10.359</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>9.004</td><td>0.0</td><td>720</td></tr><tr><td>960 min Summer</td><td>7.211</td><td>0.0</td><td>840</td></tr><tr><td>1440 min Summer</td><td>5.263</td><td>0.0</td><td>1086</td></tr><tr><td>2160 min Summer</td><td>3.833</td><td>0.0</td><td>1476</td></tr><tr><td>2880 min Summer</td><td>3.056</td><td>0.0</td><td>1900</td></tr><tr><td>4320 min Summer</td><td>2.218</td><td>0.0</td><td>2684</td></tr><tr><td>5760 min Summer</td><td>1.764</td><td>0.0</td><td>3464</td></tr><tr><td>7200 min Summer</td><td>1.478</td><td>0.0</td><td>4248</td></tr><tr><td>8640 min Summer</td><td>1.279</td><td>0.0</td><td>4928</td></tr><tr><td>10080 min Summer</td><td>1.133</td><td>0.0</td><td>5656</td></tr><tr><td>15 min Winter</td><td>131.128</td><td>0.0</td><td>22</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	75.396	0.471	0.4	17.9	O K	30 min Summer	75.564	0.639	0.4	24.3	O K	60 min Summer	75.787	0.862	0.4	30.9	O K	120 min Summer	75.950	1.025	0.4	37.5	O K	180 min Summer	76.000	1.075	0.4	40.8	O K	240 min Summer	76.029	1.104	0.4	42.7	O K	360 min Summer	76.065	1.140	0.4	45.2	O K	480 min Summer	76.082	1.157	0.4	46.3	O K	600 min Summer	76.088	1.163	0.4	46.7	O K	720 min Summer	76.087	1.162	0.4	46.6	O K	960 min Summer	76.076	1.151	0.4	45.9	O K	1440 min Summer	76.046	1.121	0.4	43.9	O K	2160 min Summer	76.001	1.076	0.4	40.9	O K	2880 min Summer	75.958	1.033	0.4	38.0	O K	4320 min Summer	75.848	0.923	0.4	32.5	O K	5760 min Summer	75.649	0.724	0.4	27.5	O K	7200 min Summer	75.533	0.608	0.4	23.1	O K	8640 min Summer	75.438	0.513	0.4	19.5	O K	10080 min Summer	75.361	0.436	0.4	16.6	O K	15 min Winter	75.457	0.532	0.4	20.2	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	131.128	0.0	23	30 min Summer	88.088	0.0	37	60 min Summer	56.422	0.0	66	120 min Summer	34.839	0.0	126	180 min Summer	25.861	0.0	186	240 min Summer	20.787	0.0	244	360 min Summer	15.300	0.0	364	480 min Summer	12.289	0.0	482	600 min Summer	10.359	0.0	602	720 min Summer	9.004	0.0	720	960 min Summer	7.211	0.0	840	1440 min Summer	5.263	0.0	1086	2160 min Summer	3.833	0.0	1476	2880 min Summer	3.056	0.0	1900	4320 min Summer	2.218	0.0	2684	5760 min Summer	1.764	0.0	3464	7200 min Summer	1.478	0.0	4248	8640 min Summer	1.279	0.0	4928	10080 min Summer	1.133	0.0	5656	15 min Winter	131.128	0.0	22
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Ipsum Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS		Kanes Hill SW Strategy Outfall 4			
Date 16/06/2025 14:28 File 7230 - SW Outfall Struc...		Designed by TSH Checked by KG			
Innovyze		Source Control 2020.1.3			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	75.646	0.721	0.4	27.4	O K
60 min Winter	75.905	0.980	0.4	35.0	O K
120 min Winter	76.024	1.099	0.4	42.4	O K
180 min Winter	76.083	1.158	0.4	46.3	O K
240 min Winter	76.118	1.193	0.4	48.7	Flood Risk
360 min Winter	76.163	1.238	0.4	51.7	Flood Risk
480 min Winter	76.188	1.263	0.4	53.3	Flood Risk
600 min Winter	76.201	1.276	0.4	54.1	Flood Risk
720 min Winter	76.206	1.281	0.4	54.4	Flood Risk
960 min Winter	76.199	1.274	0.4	54.0	Flood Risk
1440 min Winter	76.158	1.233	0.4	51.4	Flood Risk
2160 min Winter	76.098	1.173	0.4	47.3	O K
2880 min Winter	76.034	1.109	0.4	43.1	O K
4320 min Winter	75.900	0.975	0.4	34.7	O K
5760 min Winter	75.639	0.714	0.4	27.1	O K
7200 min Winter	75.475	0.550	0.4	20.9	O K
8640 min Winter	75.355	0.430	0.4	16.3	O K
10080 min Winter	75.254	0.329	0.4	12.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	88.088	0.0	37		
60 min Winter	56.422	0.0	66		
120 min Winter	34.839	0.0	124		
180 min Winter	25.861	0.0	182		
240 min Winter	20.787	0.0	240		
360 min Winter	15.300	0.0	356		
480 min Winter	12.289	0.0	472		
600 min Winter	10.359	0.0	586		
720 min Winter	9.004	0.0	698		
960 min Winter	7.211	0.0	916		
1440 min Winter	5.263	0.0	1168		
2160 min Winter	3.833	0.0	1620		
2880 min Winter	3.056	0.0	2072		
4320 min Winter	2.218	0.0	2904		
5760 min Winter	1.764	0.0	3696		
7200 min Winter	1.478	0.0	4464		
8640 min Winter	1.279	0.0	5184		
10080 min Winter	1.133	0.0	5944		
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Ipsium Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS	Kanes Hill SW Strategy Outfall 4	
Date 16/06/2025 14:28 File 7230 - SW Outfall Struc...	Designed by TSH Checked by KG	
Innovyze Source Control 2020.1.3		

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.900	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.079

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.040	4 8	0.039

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Ipsum Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS	Kanes Hill SW Strategy Outfall 4																			
Date 16/06/2025 14:28 File 7230 - SW Outfall Struc...	Designed by TSH Checked by KG																			
Innovyze																				
Source Control 2020.1.3																				
Model Details Storage is Online Cover Level (m) 76.400 Complex Structure Cellular Storage Invert Level (m) 74.925 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.05904 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.05904 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>40.0</td><td>40.0</td><td>0.800</td><td>40.0</td><td>54.7</td></tr><tr><td>0.525</td><td>40.0</td><td>54.7</td><td>0.801</td><td>0.0</td><td>54.7</td></tr></tbody></table> Porous Car Park Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 6.2 Membrane Percolation (mm/hr) 1000 Length (m) 36.0 Max Percolation (l/s) 62.0 Slope (1:X) 150.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 75.725 Membrane Depth (m) 230			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	40.0	40.0	0.800	40.0	54.7	0.525	40.0	54.7	0.801	0.0	54.7
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 989 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>74.288</td><td>0.413</td><td>0.7</td><td>27.5</td><td>O K</td></tr><tr><td>30 min Summer</td><td>74.440</td><td>0.565</td><td>0.7</td><td>37.6</td><td>O K</td></tr><tr><td>60 min Summer</td><td>74.599</td><td>0.724</td><td>0.7</td><td>48.2</td><td>O K</td></tr><tr><td>120 min Summer</td><td>74.754</td><td>0.879</td><td>0.7</td><td>58.5</td><td>O K</td></tr><tr><td>180 min Summer</td><td>74.833</td><td>0.958</td><td>0.7</td><td>63.7</td><td>O K</td></tr><tr><td>240 min Summer</td><td>74.879</td><td>1.004</td><td>0.7</td><td>66.7</td><td>O K</td></tr><tr><td>360 min Summer</td><td>74.935</td><td>1.060</td><td>0.7</td><td>70.5</td><td>O K</td></tr><tr><td>480 min Summer</td><td>74.960</td><td>1.085</td><td>0.7</td><td>72.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>74.969</td><td>1.094</td><td>0.7</td><td>72.7</td><td>O K</td></tr><tr><td>720 min Summer</td><td>74.966</td><td>1.091</td><td>0.7</td><td>72.5</td><td>O K</td></tr><tr><td>960 min Summer</td><td>74.946</td><td>1.071</td><td>0.7</td><td>71.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>74.898</td><td>1.023</td><td>0.7</td><td>68.0</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>74.825</td><td>0.950</td><td>0.7</td><td>63.1</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>74.753</td><td>0.878</td><td>0.7</td><td>58.4</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>74.618</td><td>0.743</td><td>0.7</td><td>49.4</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>74.494</td><td>0.619</td><td>0.7</td><td>41.2</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>74.386</td><td>0.511</td><td>0.7</td><td>34.0</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>74.296</td><td>0.421</td><td>0.7</td><td>28.0</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>74.224</td><td>0.349</td><td>0.7</td><td>23.2</td><td>O K</td></tr><tr><td>15 min Winter</td><td>74.344</td><td>0.469</td><td>0.7</td><td>31.2</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>131.128</td><td>0.0</td><td>26</td></tr><tr><td>30 min Summer</td><td>88.088</td><td>0.0</td><td>41</td></tr><tr><td>60 min Summer</td><td>56.422</td><td>0.0</td><td>70</td></tr><tr><td>120 min Summer</td><td>34.839</td><td>0.0</td><td>130</td></tr><tr><td>180 min Summer</td><td>25.861</td><td>0.0</td><td>188</td></tr><tr><td>240 min Summer</td><td>20.787</td><td>0.0</td><td>248</td></tr><tr><td>360 min Summer</td><td>15.300</td><td>0.0</td><td>366</td></tr><tr><td>480 min Summer</td><td>12.289</td><td>0.0</td><td>484</td></tr><tr><td>600 min Summer</td><td>10.359</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>9.004</td><td>0.0</td><td>720</td></tr><tr><td>960 min Summer</td><td>7.211</td><td>0.0</td><td>834</td></tr><tr><td>1440 min Summer</td><td>5.263</td><td>0.0</td><td>1080</td></tr><tr><td>2160 min Summer</td><td>3.833</td><td>0.0</td><td>1476</td></tr><tr><td>2880 min Summer</td><td>3.056</td><td>0.0</td><td>1880</td></tr><tr><td>4320 min Summer</td><td>2.218</td><td>0.0</td><td>2688</td></tr><tr><td>5760 min Summer</td><td>1.764</td><td>0.0</td><td>3464</td></tr><tr><td>7200 min Summer</td><td>1.478</td><td>0.0</td><td>4184</td></tr><tr><td>8640 min Summer</td><td>1.279</td><td>0.0</td><td>4928</td></tr><tr><td>10080 min Summer</td><td>1.133</td><td>0.0</td><td>5648</td></tr><tr><td>15 min Winter</td><td>131.128</td><td>0.0</td><td>26</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	74.288	0.413	0.7	27.5	O K	30 min Summer	74.440	0.565	0.7	37.6	O K	60 min Summer	74.599	0.724	0.7	48.2	O K	120 min Summer	74.754	0.879	0.7	58.5	O K	180 min Summer	74.833	0.958	0.7	63.7	O K	240 min Summer	74.879	1.004	0.7	66.7	O K	360 min Summer	74.935	1.060	0.7	70.5	O K	480 min Summer	74.960	1.085	0.7	72.2	O K	600 min Summer	74.969	1.094	0.7	72.7	O K	720 min Summer	74.966	1.091	0.7	72.5	O K	960 min Summer	74.946	1.071	0.7	71.2	O K	1440 min Summer	74.898	1.023	0.7	68.0	O K	2160 min Summer	74.825	0.950	0.7	63.1	O K	2880 min Summer	74.753	0.878	0.7	58.4	O K	4320 min Summer	74.618	0.743	0.7	49.4	O K	5760 min Summer	74.494	0.619	0.7	41.2	O K	7200 min Summer	74.386	0.511	0.7	34.0	O K	8640 min Summer	74.296	0.421	0.7	28.0	O K	10080 min Summer	74.224	0.349	0.7	23.2	O K	15 min Winter	74.344	0.469	0.7	31.2	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	131.128	0.0	26	30 min Summer	88.088	0.0	41	60 min Summer	56.422	0.0	70	120 min Summer	34.839	0.0	130	180 min Summer	25.861	0.0	188	240 min Summer	20.787	0.0	248	360 min Summer	15.300	0.0	366	480 min Summer	12.289	0.0	484	600 min Summer	10.359	0.0	602	720 min Summer	9.004	0.0	720	960 min Summer	7.211	0.0	834	1440 min Summer	5.263	0.0	1080	2160 min Summer	3.833	0.0	1476	2880 min Summer	3.056	0.0	1880	4320 min Summer	2.218	0.0	2688	5760 min Summer	1.764	0.0	3464	7200 min Summer	1.478	0.0	4184	8640 min Summer	1.279	0.0	4928	10080 min Summer	1.133	0.0	5648	15 min Winter	131.128	0.0	26
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Ipsium Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS		Kanes Hill SW Strategy Outfall 5			
Date 16/06/2025 14:29 File 7230 - SW Outfall Struc...		Designed by TSH Checked by KG			
Innovyze		Source Control 2020.1.3			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	74.514	0.639	0.7	42.5	O K
60 min Winter	74.694	0.819	0.7	54.5	O K
120 min Winter	74.872	0.997	0.7	66.3	O K
180 min Winter	74.964	1.089	0.7	72.4	O K
240 min Winter	75.019	1.144	0.7	76.1	O K
360 min Winter	75.156	1.281	0.7	80.8	O K
480 min Winter	75.227	1.352	0.7	83.3	O K
600 min Winter	75.251	1.376	0.7	84.4	O K
720 min Winter	75.258	1.383	0.7	84.8	O K
960 min Winter	75.241	1.366	0.7	83.9	O K
1440 min Winter	75.072	1.197	0.7	79.6	O K
2160 min Winter	74.973	1.098	0.7	73.0	O K
2880 min Winter	74.867	0.992	0.7	66.0	O K
4320 min Winter	74.660	0.785	0.7	52.2	O K
5760 min Winter	74.473	0.598	0.7	39.7	O K
7200 min Winter	74.319	0.444	0.7	29.5	O K
8640 min Winter	74.205	0.330	0.7	22.0	O K
10080 min Winter	74.111	0.236	0.7	15.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	88.088	0.0	40		
60 min Winter	56.422	0.0	70		
120 min Winter	34.839	0.0	126		
180 min Winter	25.861	0.0	184		
240 min Winter	20.787	0.0	242		
360 min Winter	15.300	0.0	358		
480 min Winter	12.289	0.0	474		
600 min Winter	10.359	0.0	588		
720 min Winter	9.004	0.0	700		
960 min Winter	7.211	0.0	916		
1440 min Winter	5.263	0.0	1158		
2160 min Winter	3.833	0.0	1608		
2880 min Winter	3.056	0.0	2056		
4320 min Winter	2.218	0.0	2904		
5760 min Winter	1.764	0.0	3696		
7200 min Winter	1.478	0.0	4400		
8640 min Winter	1.279	0.0	5112		
10080 min Winter	1.133	0.0	5848		
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Ipsum Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS	Kanes Hill SW Strategy Outfall 5																			
Date 16/06/2025 14:29 File 7230 - SW Outfall Struc...	Designed by TSH Checked by KG																			
Innovyze																				
Source Control 2020.1.3																				
Model Details Storage is Online Cover Level (m) 75.750 Complex Structure Cellular Storage Invert Level (m) 73.875 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.05904 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.05904 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>70.0</td><td>70.0</td><td>1.200</td><td>70.0</td><td>87.9</td></tr><tr><td>0.425</td><td>70.0</td><td>87.9</td><td>1.201</td><td>0.0</td><td>87.9</td></tr></table> Porous Car Park Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 6.6 Membrane Percolation (mm/hr) 1000 Length (m) 75.0 Max Percolation (l/s) 137.5 Slope (1:X) 150.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 75.075 Membrane Depth (m) 230			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	70.0	70.0	1.200	70.0	87.9	0.425	70.0	87.9	1.201	0.0	87.9
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
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101.3</td><td>O K</td></tr><tr><td>600 min Summer</td><td>75.591</td><td>2.066</td><td></td><td>0.8 103.3</td><td>O K</td></tr><tr><td>720 min Summer</td><td>75.600</td><td>2.075</td><td></td><td>0.8 104.4</td><td>O K</td></tr><tr><td>960 min Summer</td><td>75.601</td><td>2.076</td><td></td><td>0.8 104.5</td><td>Flood Risk</td></tr><tr><td>1440 min Summer</td><td>75.584</td><td>2.059</td><td></td><td>0.8 102.5</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>75.547</td><td>2.022</td><td></td><td>0.8 98.2</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>75.503</td><td>1.978</td><td></td><td>0.8 93.2</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>75.403</td><td>1.878</td><td></td><td>0.8 83.9</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>75.263</td><td>1.738</td><td></td><td>0.8 75.7</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>75.033</td><td>1.508</td><td></td><td>0.8 68.7</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>74.905</td><td>1.380</td><td></td><td>0.8 62.9</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>74.789</td><td>1.264</td><td></td><td>0.7 57.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>74.458</td><td>0.933</td><td></td><td>0.6 42.5</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>131.128</td><td>0.0</td><td>27</td></tr><tr><td>30 min Summer</td><td>88.088</td><td>0.0</td><td>41</td></tr><tr><td>60 min Summer</td><td>56.422</td><td>0.0</td><td>70</td></tr><tr><td>120 min Summer</td><td>34.839</td><td>0.0</td><td>130</td></tr><tr><td>180 min Summer</td><td>25.861</td><td>0.0</td><td>188</td></tr><tr><td>240 min Summer</td><td>20.787</td><td>0.0</td><td>248</td></tr><tr><td>360 min Summer</td><td>15.300</td><td>0.0</td><td>366</td></tr><tr><td>480 min Summer</td><td>12.289</td><td>0.0</td><td>484</td></tr><tr><td>600 min Summer</td><td>10.359</td><td>0.0</td><td>604</td></tr><tr><td>720 min Summer</td><td>9.004</td><td>0.0</td><td>722</td></tr><tr><td>960 min Summer</td><td>7.211</td><td>0.0</td><td>954</td></tr><tr><td>1440 min Summer</td><td>5.263</td><td>0.0</td><td>1168</td></tr><tr><td>2160 min Summer</td><td>3.833</td><td>0.0</td><td>1544</td></tr><tr><td>2880 min Summer</td><td>3.056</td><td>0.0</td><td>1960</td></tr><tr><td>4320 min Summer</td><td>2.218</td><td>0.0</td><td>2768</td></tr><tr><td>5760 min Summer</td><td>1.764</td><td>0.0</td><td>3568</td></tr><tr><td>7200 min Summer</td><td>1.478</td><td>0.0</td><td>4328</td></tr><tr><td>8640 min Summer</td><td>1.279</td><td>0.0</td><td>5104</td></tr><tr><td>10080 min Summer</td><td>1.133</td><td>0.0</td><td>5856</td></tr><tr><td>15 min Winter</td><td>131.128</td><td>0.0</td><td>26</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	74.352	0.827		0.6 37.7	O K	30 min Summer	74.645	1.120		0.7 51.1	O K	60 min Summer	74.956	1.431		0.8 65.2	O K	120 min Summer	75.337	1.812		0.8 79.3	O K	180 min Summer	75.438	1.913		0.8 86.9	O K	240 min Summer	75.486	1.961		0.8 91.5	O K	360 min Summer	75.543	2.018		0.8 97.7	O K	480 min Summer	75.573	2.048		0.8 101.3	O K	600 min Summer	75.591	2.066		0.8 103.3	O K	720 min Summer	75.600	2.075		0.8 104.4	O K	960 min Summer	75.601	2.076		0.8 104.5	Flood Risk	1440 min Summer	75.584	2.059		0.8 102.5	O K	2160 min Summer	75.547	2.022		0.8 98.2	O K	2880 min Summer	75.503	1.978		0.8 93.2	O K	4320 min Summer	75.403	1.878		0.8 83.9	O K	5760 min Summer	75.263	1.738		0.8 75.7	O K	7200 min Summer	75.033	1.508		0.8 68.7	O K	8640 min Summer	74.905	1.380		0.8 62.9	O K	10080 min Summer	74.789	1.264		0.7 57.6	O K	15 min Winter	74.458	0.933		0.6 42.5	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	131.128	0.0	27	30 min Summer	88.088	0.0	41	60 min Summer	56.422	0.0	70	120 min Summer	34.839	0.0	130	180 min Summer	25.861	0.0	188	240 min Summer	20.787	0.0	248	360 min Summer	15.300	0.0	366	480 min Summer	12.289	0.0	484	600 min Summer	10.359	0.0	604	720 min Summer	9.004	0.0	722	960 min Summer	7.211	0.0	954	1440 min Summer	5.263	0.0	1168	2160 min Summer	3.833	0.0	1544	2880 min Summer	3.056	0.0	1960	4320 min Summer	2.218	0.0	2768	5760 min Summer	1.764	0.0	3568	7200 min Summer	1.478	0.0	4328	8640 min Summer	1.279	0.0	5104	10080 min Summer	1.133	0.0	5856	15 min Winter	131.128	0.0	26
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Ipsium Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS		Kanes Hill SW Strategy Outfall 6			
Date 16/06/2025 14:29 File 7230 - SW Outfall Struc...		Designed by TSH Checked by KG			
Innovyze		Source Control 2020.1.3			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	74.787	1.262	0.7	57.5	O K
60 min Winter	75.186	1.661	0.8	73.5	O K
120 min Winter	75.468	1.943	0.8	89.6	O K
180 min Winter	75.548	2.023	0.8	98.3	O K
240 min Winter	75.595	2.070	0.8	103.8	O K
360 min Winter	75.659	2.134	0.8	111.3	Flood Risk
480 min Winter	75.699	2.174	0.8	115.9	Flood Risk
600 min Winter	75.726	2.201	0.8	118.7	Flood Risk
720 min Winter	75.743	2.218	0.8	120.4	Flood Risk
960 min Winter	75.758	2.233	0.8	121.8	Flood Risk
1440 min Winter	75.737	2.212	0.8	119.9	Flood Risk
2160 min Winter	75.684	2.159	0.8	114.3	Flood Risk
2880 min Winter	75.628	2.103	0.8	107.7	Flood Risk
4320 min Winter	75.507	1.982	0.8	93.7	O K
5760 min Winter	75.366	1.841	0.8	81.2	O K
7200 min Winter	75.074	1.549	0.8	70.6	O K
8640 min Winter	74.895	1.370	0.8	62.5	O K
10080 min Winter	74.737	1.212	0.7	55.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	88.088	0.0	41		
60 min Winter	56.422	0.0	70		
120 min Winter	34.839	0.0	128		
180 min Winter	25.861	0.0	186		
240 min Winter	20.787	0.0	244		
360 min Winter	15.300	0.0	360		
480 min Winter	12.289	0.0	476		
600 min Winter	10.359	0.0	592		
720 min Winter	9.004	0.0	706		
960 min Winter	7.211	0.0	928		
1440 min Winter	5.263	0.0	1346		
2160 min Winter	3.833	0.0	1668		
2880 min Winter	3.056	0.0	2132		
4320 min Winter	2.218	0.0	3024		
5760 min Winter	1.764	0.0	3856		
7200 min Winter	1.478	0.0	4616		
8640 min Winter	1.279	0.0	5440		
10080 min Winter	1.133	0.0	6248		
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Ipsium Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS	Kanes Hill SW Strategy Outfall 6	
Date 16/06/2025 14:29 File 7230 - SW Outfall Struc...	Designed by TSH Checked by KG	
Innovyze		Source Control 2020.1.3

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.900	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.164

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0 4	0.054	4 8	0.055	8 12	0.055

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Ipsum Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS	Kanes Hill SW Strategy Outfall 6																			
Date 16/06/2025 14:29 File 7230 - SW Outfall Struc...	Designed by TSH Checked by KG																			
Innovyze																				
Source Control 2020.1.3																				
Model Details Storage is Online Cover Level (m) 75.900 Complex Structure Cellular Storage Invert Level (m) 73.525 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.05904 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.05904 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>48.0</td><td>48.0</td><td>1.600</td><td>48.0</td><td>96.8</td></tr><tr><td>1.525</td><td>48.0</td><td>96.8</td><td>1.601</td><td>0.0</td><td>96.8</td></tr></tbody></table> Porous Car Park Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 6.3 Membrane Percolation (mm/hr) 1000 Length (m) 62.0 Max Percolation (l/s) 108.5 Slope (1:X) 150.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 75.125 Membrane Depth (m) 230			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	48.0	48.0	1.600	48.0	96.8	1.525	48.0	96.8	1.601	0.0	96.8
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 681 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>73.785</td><td>0.310</td><td>0.4</td><td>11.8</td><td>O K</td></tr><tr><td>30 min Summer</td><td>73.905</td><td>0.430</td><td>0.4</td><td>16.3</td><td>O K</td></tr><tr><td>60 min Summer</td><td>74.029</td><td>0.554</td><td>0.4</td><td>21.0</td><td>O K</td></tr><tr><td>120 min Summer</td><td>74.146</td><td>0.671</td><td>0.5</td><td>25.5</td><td>O K</td></tr><tr><td>180 min Summer</td><td>74.202</td><td>0.727</td><td>0.5</td><td>27.6</td><td>O K</td></tr><tr><td>240 min Summer</td><td>74.232</td><td>0.757</td><td>0.5</td><td>28.8</td><td>O K</td></tr><tr><td>360 min Summer</td><td>74.263</td><td>0.788</td><td>0.5</td><td>29.9</td><td>O K</td></tr><tr><td>480 min Summer</td><td>74.270</td><td>0.795</td><td>0.5</td><td>30.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>74.266</td><td>0.791</td><td>0.5</td><td>30.1</td><td>O K</td></tr><tr><td>720 min Summer</td><td>74.260</td><td>0.785</td><td>0.5</td><td>29.8</td><td>O K</td></tr><tr><td>960 min Summer</td><td>74.242</td><td>0.767</td><td>0.5</td><td>29.1</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>74.198</td><td>0.723</td><td>0.5</td><td>27.5</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>74.128</td><td>0.653</td><td>0.5</td><td>24.8</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>74.062</td><td>0.587</td><td>0.5</td><td>22.3</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>73.948</td><td>0.473</td><td>0.4</td><td>18.0</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>73.851</td><td>0.376</td><td>0.4</td><td>14.3</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>73.770</td><td>0.295</td><td>0.4</td><td>11.2</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>73.704</td><td>0.229</td><td>0.4</td><td>8.7</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>73.650</td><td>0.175</td><td>0.4</td><td>6.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>73.829</td><td>0.354</td><td>0.4</td><td>13.4</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>131.128</td><td>0.0</td><td>26</td></tr><tr><td>30 min Summer</td><td>88.088</td><td>0.0</td><td>41</td></tr><tr><td>60 min Summer</td><td>56.422</td><td>0.0</td><td>70</td></tr><tr><td>120 min Summer</td><td>34.839</td><td>0.0</td><td>128</td></tr><tr><td>180 min Summer</td><td>25.861</td><td>0.0</td><td>186</td></tr><tr><td>240 min Summer</td><td>20.787</td><td>0.0</td><td>246</td></tr><tr><td>360 min Summer</td><td>15.300</td><td>0.0</td><td>362</td></tr><tr><td>480 min Summer</td><td>12.289</td><td>0.0</td><td>480</td></tr><tr><td>600 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Summer	73.905	0.430	0.4	16.3	O K	60 min Summer	74.029	0.554	0.4	21.0	O K	120 min Summer	74.146	0.671	0.5	25.5	O K	180 min Summer	74.202	0.727	0.5	27.6	O K	240 min Summer	74.232	0.757	0.5	28.8	O K	360 min Summer	74.263	0.788	0.5	29.9	O K	480 min Summer	74.270	0.795	0.5	30.2	O K	600 min Summer	74.266	0.791	0.5	30.1	O K	720 min Summer	74.260	0.785	0.5	29.8	O K	960 min Summer	74.242	0.767	0.5	29.1	O K	1440 min Summer	74.198	0.723	0.5	27.5	O K	2160 min Summer	74.128	0.653	0.5	24.8	O K	2880 min Summer	74.062	0.587	0.5	22.3	O K	4320 min Summer	73.948	0.473	0.4	18.0	O K	5760 min Summer	73.851	0.376	0.4	14.3	O K	7200 min Summer	73.770	0.295	0.4	11.2	O K	8640 min Summer	73.704	0.229	0.4	8.7	O K	10080 min Summer	73.650	0.175	0.4	6.6	O K	15 min Winter	73.829	0.354	0.4	13.4	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	131.128	0.0	26	30 min Summer	88.088	0.0	41	60 min Summer	56.422	0.0	70	120 min Summer	34.839	0.0	128	180 min Summer	25.861	0.0	186	240 min 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Date 16/06/2025 14:30 File 7230 - SW Outfall Struc...		Designed by TSH Checked by KG			
Innovyze		Source Control 2020.1.3			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	73.964	0.489	0.4	18.6	O K
60 min Winter	74.104	0.629	0.5	23.9	O K
120 min Winter	74.239	0.764	0.5	29.0	O K
180 min Winter	74.367	0.892	0.5	31.6	O K
240 min Winter	74.412	0.937	0.5	33.0	O K
360 min Winter	74.450	0.975	0.5	34.6	O K
480 min Winter	74.462	0.987	0.5	35.2	O K
600 min Winter	74.463	0.988	0.5	35.2	O K
720 min Winter	74.456	0.981	0.5	34.9	O K
960 min Winter	74.435	0.960	0.5	33.9	O K
1440 min Winter	74.371	0.896	0.5	31.7	O K
2160 min Winter	74.205	0.730	0.5	27.7	O K
2880 min Winter	74.103	0.628	0.5	23.8	O K
4320 min Winter	73.933	0.458	0.4	17.4	O K
5760 min Winter	73.797	0.322	0.4	12.2	O K
7200 min Winter	73.689	0.214	0.4	8.1	O K
8640 min Winter	73.605	0.130	0.4	4.9	O K
10080 min Winter	73.546	0.071	0.3	2.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	88.088	0.0	40		
60 min Winter	56.422	0.0	68		
120 min Winter	34.839	0.0	126		
180 min Winter	25.861	0.0	184		
240 min Winter	20.787	0.0	240		
360 min Winter	15.300	0.0	356		
480 min Winter	12.289	0.0	468		
600 min Winter	10.359	0.0	576		
720 min Winter	9.004	0.0	680		
960 min Winter	7.211	0.0	772		
1440 min Winter	5.263	0.0	1074		
2160 min Winter	3.833	0.0	1520		
2880 min Winter	3.056	0.0	1936		
4320 min Winter	2.218	0.0	2736		
5760 min Winter	1.764	0.0	3520		
7200 min Winter	1.478	0.0	4248		
8640 min Winter	1.279	0.0	4856		
10080 min Winter	1.133	0.0	5448		
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MJA Consulting		Page 3
Ipsium Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS	Kanes Hill SW Strategy Outfall 7	
Date 16/06/2025 14:30 File 7230 - SW Outfall Struc...	Designed by TSH Checked by KG	
Innovyze		Source Control 2020.1.3

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.900	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.057

Time (mins) Area			Time (mins) Area			Time (mins) Area		
From:	To:	(ha)	From:	To:	(ha)	From:	To:	(ha)
0	4	0.019	4	8	0.019	8	12	0.019

MJA Consulting		Page 4																		
Ipsum Court, 24 The Quadrant Abingdon Science Park Abingdon, OX14 3YS	Kanes Hill SW Strategy Outfall 7																			
Date 16/06/2025 14:30 File 7230 - SW Outfall Struc...	Designed by TSH Checked by KG																			
Innovyze																				
Source Control 2020.1.3																				
Model Details Storage is Online Cover Level (m) 74.950 Complex Structure Cellular Storage Invert Level (m) 73.475 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.05904 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.05904 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>40.0</td><td>40.0</td><td>0.800</td><td>40.0</td><td>55.0</td></tr><tr><td>0.575</td><td>40.0</td><td>55.0</td><td>0.801</td><td>0.0</td><td>55.0</td></tr></tbody></table> Porous Car Park Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 6.1 Membrane Percolation (mm/hr) 1000 Length (m) 60.0 Max Percolation (l/s) 101.7 Slope (1:X) 150.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 74.275 Membrane Depth (m) 230			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	40.0	40.0	0.800	40.0	55.0	0.575	40.0	55.0	0.801	0.0	55.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	40.0	40.0	0.800	40.0	55.0															
0.575	40.0	55.0	0.801	0.0	55.0															
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Appendix E:
SuDS Maintenance and Management Plan

**NETLEY FIRS
KANES HILL
SOUTHAMPTON
SO19 6AJ**

SUDS MANAGEMENT AND MAINTENANCE PLAN

HI-ACRE CONSTRUCTION Ltd

JUNE 2025
REF: TSH/RP/0530/7230



DOCUMENT CONTROL RECORD

Document Issue:

Rev	Date	Issue Status	Prepared by	Checked by
-	19.06.25	First Issue	T. Sims-Harris	K. Gebhart



Contents

1. Introduction.....	1
2. SuDS Layout and Design.....	3
3. Permeable Pavement.....	4

Appendices

Appendix A – Surface Water Drainage Strategy

References

The SuDS Manual – CIRIA C753 (2015) ISBN 9780-86017-760-9



1 Introduction

1.1 Scope

This document sets out the principles for the long-term management and maintenance of the proposed surface water Sustainable Drainage Systems (SuDS) installed as part of the development of land at Netley Firs, Kanes Hill, Southampton, Hampshire.

1.2 The purpose of this document is to ensure that the management company that will be maintaining the SuDS is entrusted with an inspection and maintenance programme to ensure the optimum operation of the surface water drainage network is continually maintained for the lifetime of the development and to prevent the increased risk of flooding both on and off site in accordance with the NPPF.

1.3 The principal storm water drainage strategy for the development is to attenuate flows in SuDS features including permeable pavements. This report should be read in conjunction with MJA drawings 7230-MJA-SW-XX-DR-C-003 Surface Water Drainage Strategy which is included in **Appendix A**.

1.4 Private drainage relating to individual properties such as gutters, rainwater downpipes, private inspection chambers, rodding eyes, channel drains, yard gullies etc are to be maintained by the property owner.

1.5 This document details the SuDS structures within the treatment train and their required maintenance processes to ensure that no polluted discharge to the watercourse will take place. This report will be made available to the adopting body and/or maintenance organisation that will ultimately control the SuDS assets.

1.6 This report does not include maintenance regimes for traditional pipes, chambers and gullies, these items will be offered for adoption to the Water/Sewerage Undertaker, NAV (new appointees or variation) or Highway Authority who will be responsible for maintaining these features in perpetuity.



1.7 Overview

This document is laid out in specific sections applicable to the relevant SuDS type detailing:

- A description of the SuDS component and its use.
- Maintenance requirements and frequencies.
- Inspection requirements and frequencies.

1.8 The activities listed are generic to SuDS types and represent the minimum maintenance and inspection requirements. However additional tasks, or varied maintenance frequency may be introduced as required. This may include:

- Measurement and recording of sediment levels.
- Photographic recording of problem areas
- Increased frequency of litter removal in areas identified as litter hotspots.
- Adjusted timescales of maintenance activities to minimise impact on wildlife (e.g. great crested newts, birds, voles, etc)
- The use of manual methods of maintenance to limit impact on wildlife habitat (e.g. management of emergent vegetation in ponds)

1.9 This plan has been directly referenced from the latest technical SuDS guidance within the CIRIA Report C753 The SuDS Manual (2015) and other applicable guidance.

2 SuDS Layout & Design

- 2.1 The installed SuDS system for the development will be the responsibility of the appointed Management Company.
- 2.2 Following installation and after transfer, all SuDS are to be maintained in perpetuity by the Management Company and shall ensure that it or any contractor employed by it carries out periodic maintenance of all such SuDS in accordance with the schedules listed in this report.
- 2.3 Inspection checks shall be carried out by a qualified and competent person, at the minimum intervals listed within the schedules and the appropriate work carried out.
- 2.4 In terms of water quality, the proposed surface water system offers a suitable level of mitigation in accordance with the Environment Agency pollution prevention guidance GP3, NPPF, CIRIA C753 and DEFRA guidance.
- 2.5 There are three categories of maintenance activities referred to in this report:
 - **Regular maintenance** (including inspections and monitoring).
Consists of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal, inspections and sampling.
 - **Occasional maintenance**
Comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).
 - **Remedial maintenance**
Comprises intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict.

3 Permeable Paving

Description

- 3.1 Permeable paving provides a pavement suitable for pedestrian and vehicular traffic, while allowing rainwater to permeate through the surface and into the underlying sub-base. The water is temporarily stored in the sub-base before discharging to the underlying ground (infiltrating) or discharging to a piped network (tanked).
- 3.2 Permeable paving, together with associated substructures, are an efficient means of managing surface water runoff close to source – intercepting runoff, reducing the volume and frequency of runoff and providing a treatment medium. Treatment processes that occur within the surface structure, the subsurface matrix (including soil layers where infiltration can occur) and the geotextile layers include:
- Filtration
 - Adsorption
 - Biodegradation
 - Sedimentation

Inspection, Maintenance Activities and Frequency

- 3.3 Refer to **Table 1** below for maintenance activities and frequency for attenuation basins.

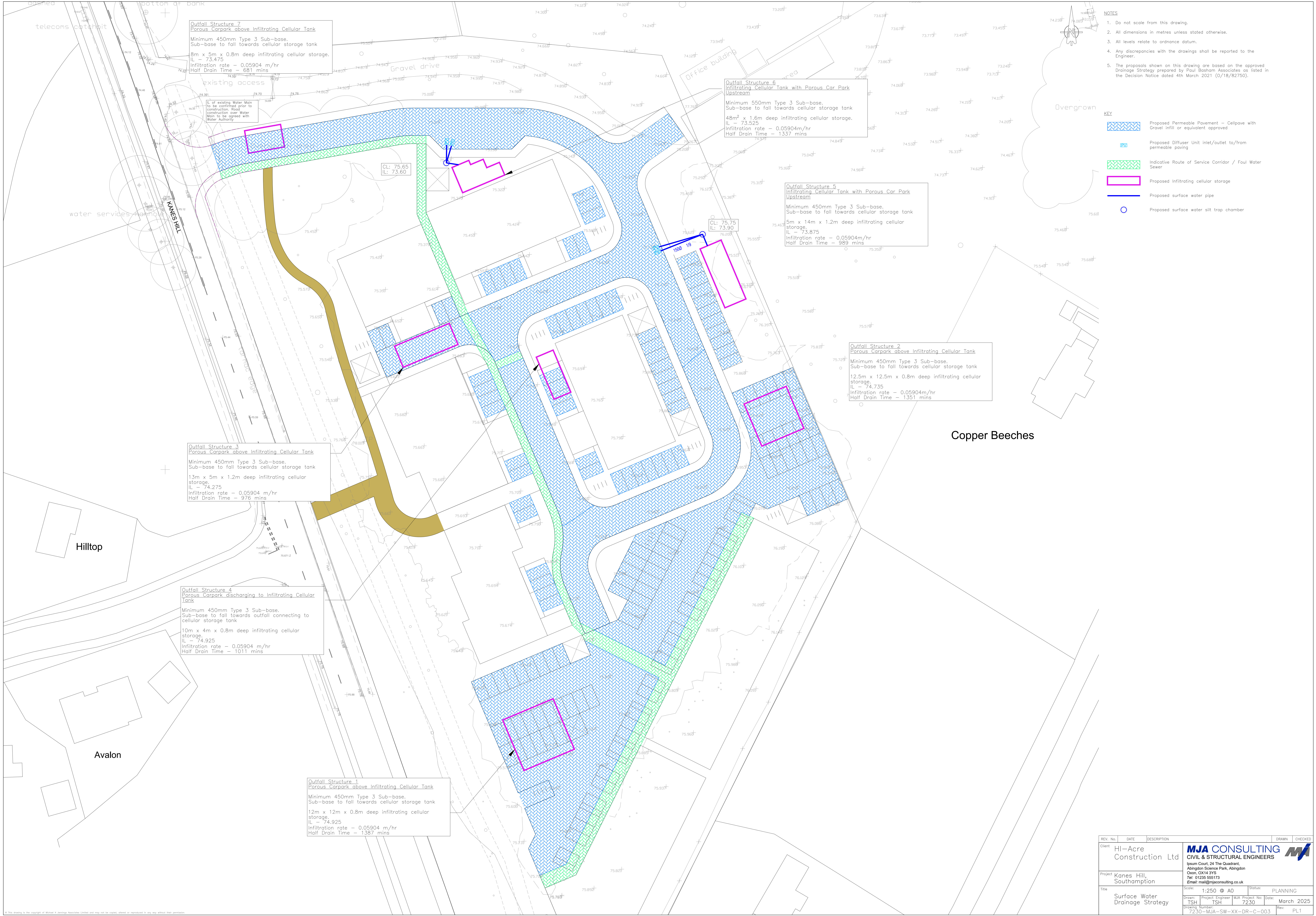
Table 1: Permeable Paving Maintenance Requirements

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually



APPENDIX A

SURFACE WATER DRAINAGE STRATEGY



- NOTES
1. Do not scale from this drawing.

2. All dimensions in metres unless stated otherwise.

3. All levels relate to ordnance datum.

4. Any discrepancies with the drawings shall be reported to the Engineer.

5. The proposals shown on this drawing are based on the approved Drainage Strategy prepared by Paul Basham Associates as listed in the Decision Notice dated 4th March 2021 (O/18/82750).
- KEY
- Proposed Permeable Pavement – Cellpave with Gravel infill or equivalent approved

Proposed Diffuser Unit Inlet/outlet to/from permeable paving

Indicative Route of Service Corridor / Foul Water Sewer

Proposed Infiltrating cellular storage

Proposed surface water pipe

Proposed surface water silt trap chamber